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At the Manager-Analyst Interface: Bonding, Reciprocity And Assurances

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The current management literature recognizes securities analysts as institutional monitors influencing managerial decision-making, but this research takes a deeper look at the interdependence between manager and analyst self-interests to reveal exchange behavior at the manager-analyst interface. Integrating agency theoretic arguments of self-interest and bonding with game theoretic principles of reciprocity and assurances, I examine how manager and analyst self interests shape managerial behavior. Drawing on a sample from the insurance industry from 2001-2012 I isolate a discrete managerial self-interested behavior by observing risk aversion in claim reserve levels. I find managers increase their self-interested behavior when analysts issue optimistic forecasts, but optimism has diminishing returns as managers perceive overly optimistic forecasts as challenging performance targets. Strong performance minimizes investor scrutiny, which strengthens the relationship between forecast optimism and managerial self-interested behavior. I further advance a model that incorporates analyst interest in obtaining internal access to firm operations and managers. When accessible managers coordinate with optimistic analysts managers are assured that overly optimistic forecasts will not constrain their self-interested behavior. However, contrary to expectations, managerial accessibility weakens the relationship between forecast optimism and managerial self-interested behavior, suggesting managers maximize their self-interested behavior when they restrict their accessibility.

At the Manager-Analyst Interface:

Bonding, Reciprocity and Assurances

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CHAPTER 1: INTRODUCTION

1.1 Managers and Securities Analysts

Securities analysts have long demonstrated influence over a firm's market value (Brown, Foster, & Noreen, 1985; Jegadeesh, Kim, Krische, & Lee, 2004; Stickel, 1995; Womack, 1996; Zuckerman, 1999), sparking interest among strategic management scholars who seek to understand the drivers of firm performance and managerial behavior related to firm value. Within the strategic management literature, two dominant theoretical perspectives have emerged to explain the role of analysts in shaping the drivers of underlying firm value. Taking an institutional perspective, scholars argue that analysts have emerged as powerful institutions shaping the behavior of legitimacy-seeking managers (e.g. Benner, 2010; Rao & Sivakumar, 1999; Westphal & Graebner, 2010; Wiersema & Zhang, 2011; Zuckerman, 2000). Scholars have also taken an agency monitoring perspective of analysts (e.g. Gentry & Shen, 2013; Wright, Kroll, & Elenkov, 2002), whereby ill-informed owners rely on analysts to monitor and relay information about managerial behavior (Luo, Wang, Raithel, & Zheng, 2015). Invoking these two perspectives, scholars have found analysts predictive of a range of managerial behaviors and decisions that are critical determinants of firm value. For example, analysts shape managers' temporal horizon (Zhang & Gimeno, 2010), business portfolio decisions (Litov, Moreton, & Zenger, 2012; Zuckerman, 2000) and tendency in invest in innovation (Benner & Ranganathan, 2012; Gentry & Shen, 2013).

Beyond the influence that analysts, as powerful institutional monitors, exercise over managerial decisions, the management literature at the interface between managers and securities analysts has further advanced to capture some behavioral exchange between managers and

analysts through signaling and impression management. Firms make personnel decisions to send positive signals to securities analysts (Gomulya & Boeker, 2014). Moreover, managers engage in impression management to maintain positive recommendations (Fanelli, Misangyi, & Tosi, 2009; Westphal & Graebner, 2010), using earnings guidance to keep analyst forecasts attainable (Washburn & Bromiley, 2014; Zhang & Gimeno, 2010). However, most of this work looks at these managerial actions as defensive responses to negative analyst outputs (Westphal & Clement, 2008; Zhang & Gimeno, 2010). Thus, the current state of the literature has a decidedly reactive view of managers with respect to analysts, treating analysts as external sources of pressure shaping managerial behavior.

There are indicators that managers can be more assertive in their relationship with analysts than current literature suggests. As finance and accounting scholars study the predictors of analysts' forecasts and recommendations, they often reference significant unobservable influences in analyst forecasts that they attribute to private information managers are sharing with analysts (Bernhardt, Campello, & Kutsoati, 2006; Chan & Hameed, 2006; Clement & Tse, 2005; Healy & Palepu, 2001; Lim, 2001). This suggests that managers, as gatekeepers to this information, have an influential tool at their disposal when interacting with analysts, allowing managers to actively engage with analysts.

Integrating key insights from the finance literature to management models of the manager-analyst interface suggests that the current exogenous understanding of analysts in the management literature does not fully capture the endogenous interplay between managers and analysts. Evidence from the management literature that managerial behavior is influenced by analysts and evidence from the finance and accounting literature that analyst behavior is influenced by managers suggests that both groups are active participants in their interactions and

their behaviors are highly interdependent. Furthermore, the interaction between analysts and managers is likely to take multiple forms, beyond the form where managers are reactive that is most pervasive in the current management literature. Using game theoretic reasoning to shape agency arguments, this dissertation builds a theory of the interdependence between managers and analysts and their choices to coordinate.

1.2 Preview of Hypotheses

In reviewing the management literature on analysts, there is evidence that managers engage in analyst-directed impression management tactics (Fanelli et al., 2009) and managers control access to private information that is critical to analysts (e.g. Cohen, Frazzini, & Malloy, 2010; Healy & Palepu, 2001). Furthermore, many authors have alluded to a highly dynamic interplay between managers and analysts that is characterized by exchanging favors (Westphal & Clement, 2008) or by an interactive negotiation (Zhang & Gimeno, 2010). Building on this work, I endeavor to unpack the behavioral exchange that happens at manager-analyst interface, empirically examining specific behaviors that managers and analysts have at their disposal to shape the value of the other's self-interested outcome. Using game-theoretic arguments of coordination in behavioral exchange to refine agency-theoretic arguments of managerial self-interested behavior, I test a model of the interdependence between managers and analysts. Figure 1 provides a summary of my proposed theoretical model and hypothesized relationships.

First, drawing on agency theory, managers are motivated by self-interest that can conflict with owner interests and lead managers to behave in self-serving ways (Eisenhardt, 1989; Jensen & Meckling, 1976). For example, managers motivated by their own self-interests engage in behavior that is effective in maintaining their employment and income but not necessarily in the

best interest of owners (Amihud & Lev, 1981; Wiseman & Gomez-Mejia, 1998). Given managers' self-serving motivations, I argue that optimistic analyst forecasts provide favorable conditions for managers to engage in self-interested behavior. Specifically, pessimistic forecasts attract investor attention (Westphal & Clement, 2008; Zhang & Gimeno, 2010), thereby limiting managers' ability to act self-interestedly. On the other hand, managers do not like overly optimistic forecasts either (Cotter, Tuna, & Wysocki, 2006) because these high forecasts are viewed as public earnings targets that have the potential to draw investor attention if missed (Graham, Harvey, & Rajgopal, 2005). Thus, optimistic analyst forecasts allow managers to engage in self-interested behavior without scrutiny from financial markets and backlash from investors but decreasingly so at high levels of optimism, revealing a non-linear relationship between analyst forecast optimism and managerial self-interested behavior. Furthermore, when firm performance is strong, investors are less likely to scrutinize managerial behavior, particularly when analysts are also offering a positive outlook. On the other hand, weak firm performance should draw investor attention to managerial behavior, regardless of analysts' forecasts.

While analyst forecast optimism provides managers with more opportunity to act self-interestedly, analysts also have interests of their own. Analysts desire access to unique private information (Cohen et al., 2010) to differentiate their forecasts and recommendations in order to maximize their professional recognition and wealth (Hong & Kubik, 2003; Ramnath, Rock, & Shane, 2008). There is evidence that analysts issue optimistic forecasts to maintain open information channels with managers (Lim, 2001). Knowing the importance of internal accessibility to analysts and in an effort to bond with analysts who direct the attention of owners, agency theory suggests managers will make minor concessions to their self-interests to protect

against larger losses to those self-interests (Fama & Jensen, 1983a; Mahoney, 2005). Thus managers, incurring scrutiny costs by being more accessible to analysts, will nonetheless provide analysts with this access when they issue optimistic forecasts to preserve ongoing analyst optimism that benefits managerial self-interested behavior.

While the tradeoff rooted in bonding arguments provides theoretical support for the exchange between managers and analysts, there is dependence assumed in these exchanges that bonding arguments insufficiently handle. Managers are only likely to be accessible to analysts if managers realize benefits to their self-interested behavior as a result of optimistic analyst forecasts. Thus, reciprocity is a critical assumption in this model. Reciprocity involves matching behaviors among two parties, both exchanging mutually beneficial resources or both withholding those resources (Parkhe, 1993). Consideration of reciprocity invokes game theoretic reasoning to study strategic interactions (Saloner, 1991). When making the decision to insure their self-interest by bonding with analysts, managers have to speculate on the actions the other party will take and the impact these actions will have on their own payoffs (Camerer, 1991; Dixit & Nalebuff, 1991). In a show of reciprocity for self-interested behavior that analyst optimism afforded them, managers are likely to be more accessible. Thus, the positive relationship between analyst optimism and managerial accessibility is fully mediated by managerial self-interested behavior.

Further applying game theoretic reasoning to the exchange relationship between managers and analysts, this exchange fits the pattern of an assurance game with two dominant equilibria where mutual coordination leads to the highest outcomes for both players and mutual defection indicates more modest outcomes (Agarwal, Croson, & Mahoney, 2010; Kollock, 1998). Correspondingly, when accessible managers and optimistic analysts coordinate,

managers should achieve their highest levels of self-interested behavior, suggesting that accessibility strengthens the relationship between analyst forecast optimism and managerial self-interested behavior. In addition, coordination choices in repeated assurance games have polarizing effects, leading players to over-coordinate or completely ignore each other (Schelling, 2011). This suggests that under conditions of mutual coordination analysts will over-coordinate by relaxing their role as monitors and moderating their forecast revisions throughout the year in a lenient way that does not attract investor attention (Amir & Ganzach, 1998). Under these more lenient conditions managers no longer need to dampen their self-interested behavior in the face of overly optimistic forecasts, suggesting that the curvilinear relationship between analyst forecast optimism and managerial self-interested behavior is more linear when managers are accessible.

1.3 Research Setting

I use reserves in the insurance industry to isolate a discrete managerial self-interested behavior. By focusing on this observable case of self-interested behavior in the insurance industry I am able to empirically examine a commonly theorized, but difficult to measure, variable of interest because it is unobservable in many other industries (Souder & Shaver, 2010). Reserve levels represent an observable activity over which managers can exercise significant discretion (Beaver, McNichols, & Nelson, 2003). While this measure is similar in principal to cash reserves (O'Brien & Folta, 2009) and slack (Bromiley, 1991) that the agency literature has identified as means self-interested managers can use toward projects that build their legacy (Matta & Beamish, 2008) and power (Baldenius, Melumad, & Meng, 2014), it is also directly related to risk aversion, a dominant managerial self-interested behavior identified in the agency

literature (Amihud & Lev, 1981; Eisenhardt, 1989). Future benefit and claims obligations are the most significant liability for an insurer (Nissim, 2010). These obligations are often not settled in the same time period that revenues (i.e., premiums) are collected and need to be estimated and held in reserves. Under-reserving for benefit and claim losses is risky, while over-reserving is an indicator of risk aversion and affords managers extra slack to invest in projects of their choice when these over-funded reserves are later released. Furthermore, while reserve levels are observable and well understood by industry experts such as security analysts, the broader investing audience is not as attuned to this accounting behavior (Graham et al., 2005). This information asymmetry between analysts and investors provides the opportunity for analysts to exercise discretion over how stringently they evaluate managerial reserve decisions.

In addition to the industry-specific research setting, I select a time period after the implementation of Regulation Fair Disclosure (RegFD) in 2000. RegFD limited managers' ability to selectively disclose private information to anyone, requiring any disclosures to be made public to all at the same time. However, even after the implementation of RegFD analysts depend on access to management and general managerial transparency to spot both positive and negative trends that are critical to analysts' accuracy and reputation (Hershberg, 2012). Thus, I position my study in the post-RegFD era, which is most relevant to current management practice, because the use of private disclosures has changed substantially following RegFD (Agrawal, Chadha, & Chen, 2006; Cohen et al., 2010). Instead, I put forward a more passive form of exchange between managers and analysts whereby managers allow analysts internal access but analysts must then draw their own conclusions.

1.4 Summary of Findings and Contributions

Expanding on the current institutional agency monitoring perspective of analysts as they interact with managers, I do not assume a deferential role for managers in their interaction with analysts. Managers and analysts engage with one another to maximize their own self-interests. I find support for the idea that managers are able to engage in self-interested behavior when analysts issue optimistic forecasts, particularly when firm performance is strong.

Drawing on game theoretic insights, I argue the interdependence among managers and analysts places constraints on the value of their individual outcomes. Managers and analysts are making choices that are embedded in a pattern of reciprocity where managers take seemingly counterproductive actions to insure their own self-interests. However, while I find some support in a post hoc analysis of a significant relationship between optimistic forecasts and managerial accessibility, it is in the opposite direction than hypothesized. It appears managers are more accessible to placate pessimistic analysts, not as a show of reciprocity toward optimistic analysts. Consistent with this lack of reciprocity, I also do not find support that managerial self-interested behavior plays any role in the relationship between analyst forecasts and managerial accessibility. It is possible the lack of support can be attributed to measurement error with these variables being measured too distally to capture the hypothesized relationships.

Finally, I argue that the nature of the assurance game between managers and analysts suggests the payoffs that managers realize to their self-interested behavior will be highest when accessible managers coordinate with optimistic analysts and more linear as overly optimistic analysts over-coordinate by being more lenient on accessible managers. I did find evidence for the later effect, such that the relationship between analyst forecast optimism and managerial self-interested behavior is more linear when managers are accessible to analysts. However, the

overall relationship is not stronger as expected. In fact, the results show a significant effect in the opposite direction – the relationship between analysts forecast optimism and managerial self-interested behavior is weaker when managers are accessible. These findings reveal a result more consistent with a prisoner's dilemma game than an assurance game, suggesting managers and analysts may not interact in ways that foster coordination as I expected. I further explore this unexpected result in a post-hoc analysis that provides additional insights. This supplementary analysis suggests that firm performance could be changing the motivation of managers and analysts to coordinate. When firm performance is strong managers are able to maximize their self-interested behavior relative to more optimistic forecasts by limiting their accessibility. Under these favorable conditions managers have little incentive to be accessible, but analysts still have incentive to be optimistic, as their customers depend on them to cover high performing firms (Irvine, 2004). Thus, strong firm performance may create asymmetry in the exchange relationship between managers and analysts and change the value of their mutual coordination for managers.

I contribute to current theory by capturing the interdependent and mutually active interplay between managers and analysts, providing a richer understanding of the relationship between managers and analysts than is appreciated in the current literature. In using game-theoretic reasoning to inform an agency-based model of managers and analysts, I make several theoretical contributions. First, I illuminate the interdependence between managers and analysts by defining the interdependent behaviors managers and analysts engage in, namely analyst optimism and managerial accessibility. I articulate how and why these behaviors impact the other's individual utility and incorporate the role reciprocity plays in activating these behaviors. Second, I find variation in the exchange between managers and analysts stemming from the

ability of managers to be active participants in their relationship with securities analysts. Managers are not strictly reactive to analysts; managers are able to actively limit their accessibility to optimistic analysts toward self-interested ends.

By examining the self-interested motivations of both managers and analysts, this dissertation responds to a call for concrete examples of opportunistic interdependence between stakeholder groups and examination of the outcomes of this interdependence (von Werder, 2011). Through the self-motivated exchanges between managers and analysts, owners are not always extracting maximum value from either managers or analysts. This introduces a contingency on agency theory, where interdependence among non-principals modifies typical agency outcomes. Coordination between an agent and an intermediary for their principal or even the desire for coordination on the part of the intermediary can lead to multiplicative agency costs as the agent uses the intermediary to shield their self-interested behavior. Moreover, the application of game theoretic reasoning to managers and analysts has important theoretical implications because it is representative of a reality that scholars have observed in other contexts (Harris, Johnson, & Souder, 2013). The potential of reciprocity fueling coordination in ways that impair firm outcomes, is similar to investors and underwriters coordinating to underprice IPOs (e.g. Arthurs, Hoskisson, Busenitz, & Johnson, 2008).

In addition, I make three key empirical extensions in the measurement of critical managerial and analyst constructs and identification of a non-linear relationship between these manager and analysts constructs. First, I isolate a discrete managerial self-interested behavior by measuring risk aversion observed through reserves in the insurance industry. Measures of risk averse behavior on the part of managers are often composite measures, such as aggregates of debt, R&D and capital expenditures (e.g. Devers, McNamara, Wiseman, & Arrfelt, 2008; Miller

& Bromiley, 1990) that impede free choice on the part of the manager and fail to isolate specific risk decisions. Reserve behavior is a specific decision managers make in the insurance industry that has risk properties. Second, finance and accounting scholars have long lamented the lack of measures available to capture managerial private information disclosures (Core, 2001; Healy & Palepu, 2001; Lang & Lundholm, 1993) and there is little discussion of any derivative of this practice continuing in a post-RegFD environment. Thus, I introduce a more passive proxy of information exchange from managers to securities analysts by measuring managerial accessibility. By measuring the intensity of the annual interaction between managers and analysts who cover their firm I can capture how accessible managers are to analysts post-RegFD.

Third, I test a curvilinear form of analyst forecast optimism to capture a concept often discussed in the literature, but not often modeled – managers want analysts to be optimistic, but not too optimistic. By including a quadratic term on forecast optimism in my models, I find that managerial self-interested behavior increases with analyst optimism but this effect tapers off as the pressure of overly high and public performance targets weighs on managers. Furthermore, most of the management literature has placed emphasis on the pessimistic end of analyst forecasts, but analyst forecasts are considered to be optimistically biased (De Bondt & Thaler, 1990). Thus, examining the effects of optimism is perhaps more critical to understanding analyst impact on management phenomena.

Finally, this work has broader implications to management theory and practice. First, managers and analysts are adaptable to regulatory changes. After RegFD, information is still critical to analysts motivating them to seek out information through more passive means that managers can manipulate to achieve their self-interested goals. Second, analysts are flawed monitors, a double-edged sword for owners. Analysts are important to attracting capital and

maintaining market value (e.g. Brown et al., 1985; Jegadeesh et al., 2004; Zuckerman, 1999), but, influenced by their self-interests, they also engage with managers in such a way that encourages non-optimal uses of firm capital.

CHAPTER 2: A LITERATURE REVIEW AT THE MANAGER AND ANALYST INTERFACE

2.1 Securities Analysts Defined

Securities analysts, also known as financial analysts, conduct financial analysis primarily on publicly traded companies. Since the 1980's large-scale growth in individual wealth grew the ranks of individual investors and correspondingly elevated the role of securities analysts in evaluating firm performance (Useem, 1996). Securities analysts forecast earnings and other financial measures, issue recommendations (Schipper, 1991) and make other verbal (e.g. Frankel, Mayew, & Sun, 2010) and written assessments (e.g. Benner, 2010; Feldman, Gilson, & Villalonga, 2014) about the current state and future prospects of the firm.

The two primary types of securities analysts are sell-side and buy-side analysts. Sell-side analysts primarily work for brokerage firms and investment banks, while buy-side analysts work for institutional investors (Groysberg, Healy, Serafeim, & Shanthikumar, 2013). Going forward, unless otherwise noted, I will focus specifically on sell-side analysts. Buy-side analysts, like sell-side analysts, make stock recommendations but, since they are largely employed by institutional investors, their output is specific to each institution's needs (Schipper, 1991). As employees of institutional investors and effectively proxies for owners, buy-side analysts more closely meet the needs of investors (Groysberg et al., 2013), and, as a result, do not sit squarely in the middle of the investor-manager relationship (Harris & Souder, 2004). On the other hand, sell-side analysts not only produce earnings forecasts and make stock recommendations for a broader public audience, which often includes buy-side analysts (Schipper, 1991), but sell-side analysts also are likely to engage in reciprocal relationships with managers (Dirsmith &

Covaleski, 1983; Fanelli et al., 2009; Westphal & Graebner, 2010). Thus, going forward I will be focused on sell-side analysts, simply referring to them as securities analysts or analysts.

2.2 The Contribution of Management Research to the Organization-Analyst Interface

The empirical study of analysts originates in the finance and accounting literature with the finance literature largely focused on the relationship between investors and analysts as they seek to understand the role of analysts in capital markets. Given the relevance of analysts to investors and firm capital market value (Brown et al., 1985; Elton, Gruber, & Gultekin, 1981; Jegadeesh et al., 2004; Stickel, 1995; Womack, 1996) and analysts' ability to serve as accurate strategy informants (Chen, Farh, & MacMillan, 1993), organization and management scholars have likewise taken an interest in analyst-related scholarship ranging from using analyst outputs as proxy measures of organizational constructs (Bromiley, 1991; Navis & Glynn, 2010) to exogenously incorporating analyst behavior into models of organizational and managerial behavior. Given my emphasis on the relationship between managers and analysts, I will focus this review on the latter, examining the impact of analysts on strategic behavior within organizations, the dynamic nature of the relationship between managers and analysts, and important qualifiers that management scholars have identified in analyst behavior that likely inform analysts' relationships with managers.

Management scholars have shifted the conversation related to securities analysts in three important ways. First, management scholars have focused on analysts' relationships to critical strategic firm behaviors that are controlled by managers and significantly influence overall firm value, such as corporate social performance (Luo et al., 2015), the horizon of competitive managerial decisions (Zhang & Gimeno, 2010), the convergence of business portfolio decisions

(Feldman et al., 2014; Litov et al., 2012; Nicolai, Schulz, & Thomas, 2010; Zuckerman, 2000) and the tendency to invest in innovation (Benner, 2010; Benner & Ranganathan, 2012; Gentry & Shen, 2013). Strategic management scholars have also highlighted the role analysts play in validating and shaping a firm's internal organization, including top management personnel decisions (Gomulya & Boeker, 2014; Puffer & Weintrop, 1991; Wiersema & Zhang, 2011) and internal organizational structure (Rao & Sivakumar, 1999). Second, management scholars have placed emphasis on the analyst-manager interface by recognizing that there is a dynamic relationship between analysts and managers (Dirsmith & Covaleski, 1983) with managers negotiating with analysts (Zhang & Gimeno, 2010) and successfully using impression management tactics to positively influence analyst outputs (Fanelli et al., 2009; Washburn & Bromiley, 2014; Westphal & Graebner, 2010).

Finally, within the management literature scholars use securities analysts as a generalizable sample to empirically test micro-level organizational phenomenon such as job transfers (Groysberg, Lee, & Nanda, 2008), changes in job roles (Groysberg & Lee, 2009), evaluative outcomes (Bowers, in press), team dynamics (Groysberg, Polzer, & Elfenbein, 2011b), mimetic behaviors (Rao, Greve, & Davis, 2001), social network effects (Burt, 2007), competitive behavior among analysts (Bowers, Greve, Mitsuhashi, & Baum, 2014) and even the theatricality of management presentations to analysts (Biehl-Missal, 2011). These studies highlight contingencies on analyst accuracy and forecasting behavior, such as category membership (Bowers, in press), the resource endowments of their employers (Groysberg et al., 2008), herding behaviors (Rao et al., 2001), competitive dynamics among analysts with similar coverage (Bowers et al., 2014), and analyst access to diverse information (Burt, 2007). Accuracy is critical to any model of analysts in organization science because much of their

behavior, including their interface with managers, is motivated by their desire for accuracy (Hong & Kubik, 2003; Ramnath et al., 2008).

In summary, management scholarship related to analysts grew out of a deep finance and accounting literature and applied critical areas of strategic management to make significant contributions to our understanding of the role of analysts in organizations, in particular as they interface with managers. However, despite the appearance of a broad cross-disciplinary understanding of analysts, I contend that we have only started to fully understand the nature of the manager-analyst interface. Next, I will review the two dominant theoretical perspectives used to understand the relationship between managers and analysts.

2.3 The Manager and Analyst Interface: The Agency Monitoring Perspective

The origins of analyst research in the finance and accounting literature highlight the role analysts play in making private information publicly available and accessible, which ultimately contributes to efficient security pricing. Investors look to analysts for accurate and impartial information through their earnings forecasts, stock recommendations, and other verbal and written assessments to help investors as they try to value firms and, more specifically, the future value of managers' investment decisions. Analysts provide investors with access to private information (e.g. Bernhardt et al., 2006; Chan & Hameed, 2006; Clement & Tse, 2005; Healy & Palepu, 2001; Lim, 2001) and combine that private information with external information, historical outcomes and the analysts' own expertise (Schipper, 1991) to develop forecasts and make recommendations about the future prospects of the firm (Bradshaw, 2004). Ultimately, analysts' forecasts and stock recommendations do have a significant effect on stock price

(Brown et al., 1985; Elton et al., 1981; Jegadeesh et al., 2004; Stickel, 1995; Womack, 1996), suggesting the information analysts provide investors shapes investor decision making.

This perspective largely invokes agency theory, such that ill-informed owners rely on securities analysts to reduce the information asymmetry (Luo et al., 2015) that is inherent in the owner-manager relationship (Jensen & Meckling, 1976). Analysts reduce this information asymmetry by providing investors with private information (Healy & Palepu, 2001; Lim, 2001) and serving as monitors over managerial performance by setting goals for managers (Gentry & Shen, 2013) and monitoring managerial self-serving behavior (Irani, 2004; Wright et al., 2002). Since analysts monitor managerial behavior and their goal as a monitor is to preserve shareholder value, analysts elicit managerial behaviors aimed at meeting analysts' forecasts each quarter to demonstrate immediate shareholder return, such as cutting longer-horizon investments (Gentry & Shen, 2013; Graham et al., 2005), making short-term competitive decisions (Zhang & Gimeno, 2010), and repurchasing shares (Benner & Ranganathan, 2012; Sanders & Carpenter, 2003).

The agency perspective of analysts as information intermediaries and monitors also qualifies and provides a more nuanced understanding of the analyst-manager interface. There are contextual moderators, such as industry uncertainty, that change the importance of information to investors (e.g. Conroy & Harris, 1987) and, subsequently, either strengthen or weaken analysts' relevance to managers. Furthermore, there is evidence that unobservable information predominantly drives analysts' recommendations and valuations (e.g. Bell, 1984; Koch & Cebula, 1994) and, because this often represents private information from managers (Healy & Palepu, 2001), it has more value to investors. Finally, analyst biases account for variance in the quality of the information analysts provide investors and the rigor of their monitoring efforts over managers. Specifically, optimism biases in analyst forecasts emerge (De

Bondt & Thaler, 1990; Schipper, 1991) as analysts seek to retain access to private information channels to maintain their relative accuracy (Lim, 2001), attract retail investors to invest through their brokerage firm (Irvine, 2004), and ultimately achieve favorable career outcomes (e.g. Cohen, Frazzini, & Malloy, 2012; Hong & Kubik, 2003; Stickel, 1995).

2.4 The Manager-Analyst Interface: The Institutional Perspective

Grounded in their significant influence over investors, institutional theorists have argued that analysts have developed as powerful institutions that confer legitimacy upon firms and their managers (Navis & Glynn, 2010; Zuckerman, 1999). Some have built off of the monitoring role of analysts, combining it with tenets of institutional theory to evolve a theory of analysts as legitimate monitors (Wiersema & Zhang, 2011), suggesting analysts have monitoring power in their own right and do not always monitor consistent with investor interests. Mimetic forces have reinforced this institutional treatment of analysts through routines and infrastructure geared at perpetuating the manager-analyst relationship (Rao & Sivakumar, 1999). This institutional perspective of analysts explains why managers make substantial strategic decisions that do not necessarily contribute to shareholder value and are more consistent with industry-aligned analyst interests than diversified owner interests, such as divestment (Zuckerman, 2000), highly focused strategies (Nicolai et al., 2010), competitively undifferentiated strategies (Litov et al., 2012), delayed adoption of innovative technologies (Benner, 2010), and share repurchase (Benner & Ranganathan, 2012; Sanders & Carpenter, 2003).

In addition to studying significant strategic actions managers take to be consistent with analyst preferences, management scholars have also used institutional theory to capture defensive actions undertaken by managers in an attempt to maintain legitimacy among analysts.

Legitimacy-protecting managers engage with analysts in an attempt to shape their assessments of the firm by rendering favors (Westphal & Clement, 2008), using overly optimistic rhetoric (Fanelli et al., 2009), and appeasing analysts with symbolic strategic actions (Westphal & Graebner, 2010).

2.5 Summary and Assessment

Agency and institutional theory have driven two dominant perspectives of securities analysts in scholarly research - analysts as information suppliers and monitors and analysts as a legitimacy-bestowing institution. These perspectives are related, both holding up analysts as powerful institutional monitors and assuming a relatively deferential role for managers in their relationship with analysts. Despite work that acknowledges some reciprocity between managers and analysts from negotiation-like interactions (Cotter et al., 2006; Zhang & Gimeno, 2010) to impression management and persuasive tactics that change analyst outputs (Fanelli et al., 2009; Washburn & Bromiley, 2014; Westphal & Clement, 2008; Westphal & Graebner, 2010), within the management literature there is still an assumption that managers are acting deferentially with respect to analysts.

The work done to date on the agency and institutional perspectives of analysts has focused on the need analyst coverage meets for owners. The additional monitoring analysts provide should reduce agency costs, leading more-highly-covered firms to outperform their lesser-covered or non-covered peers. Likewise, the institutional status of analysts should confer legitimacy benefits to firms, ultimately resulting in investor confidence and firm access to capital. With strict focus on the benefits of analyst coverage to owners, both perspectives imply positive performance effects of analyst coverage. Yet empirical tests of these theories stop short

of testing this relationship to performance. Furthermore, business leaders (e.g. Turner, 2005) and the media (e.g. New, September 24, 2012) have long lamented the role capital markets and their intermediaries play in depleting firm value by placing excessive emphasis on earnings at the expense of firm operating performance and long term value. Taken together these observations suggest that analysts likely have a more tenuous relationship with firm value than is currently represented in existing models of security analysts.

Furthermore, it may not be accurate to assume analysts maintain a controlling influence over managerial behavior even if their profession developed to fill that role. Analysts emerged as a profession in the 1980's to give guidance and voice to the growing ranks of individual investors (Useem, 1996) who did not have the knowledge or concentrated influence to challenge managers. However, the growing body of work that recognizes a more dynamic relationship between managers and analysts (Westphal & Clement, 2008; Westphal & Graebner, 2010) suggests analyst behavior may be as malleable as managerial behavior. Moreover, finance and accounting scholars highlight a critical tool that managers use to actively engage with analysts. Private information from managers plays a critical role in shaping analyst's forecasts and recommendations (Bernhardt et al., 2006; Chan & Hameed, 2006; Clement & Tse, 2005; Lim, 2001) but is difficult to observe and directly measure (Core, 2001; Healy & Palepu, 2001; Lang & Lundholm, 1993). This evidence suggests managers have both the potential and tools to engage in an active exchange with analysts.

In the next chapter, I explore a more active role for managers with respect to analysts, using a more holistic application of agency theory to the manager-analyst relationship by incorporating agency-bonding arguments to explain the motivation behind the interdependence of managers and analysts. Specifically, I will examine analysts as monitors, directing the

attention of investors, either toward or away from self-interested agent manager behavior. Managers, in an attempt to further their self-interested pursuits, bond with monitoring analysts by offering them access to management and internal operations.

CHAPTER 3: AGENT MANAGERS AND MONITORING ANALYSTS

3.1 Agency Theory

Agency theory deals with the tension between principals and agents, most often applied to the owner-manager contract. Investors are principals who contract with specialized managers, the agents, to run a particular firm and make firm-level decisions on their behalf (Fama & Jensen, 1983a). In an agency relationship, tension between principals and agents emerges, resulting from information asymmetry, divergent interests and different risk preferences (Eisenhardt, 1989). Principal investors seek to increase their residual claims (Fama & Jensen, 1983a) while their agents are more focused on self-interested outcomes (Williamson, 1985) such as building a reputation and enduring legacy (Hambrick & Fukutomi, 1991) and maximizing personal utility, including employment security and personal wealth (Wiseman & Gomez-Mejia, 1998).

Principals can address agent self-serving behavior with the threat of changing agents or by deploying monitoring and incentive alignment tools such as hierarchies (Fama & Jensen, 1983a), boards of directors (Fama & Jensen, 1983b) and incentive structures (Dushnitsky & Shapira, 2010; Tosi, Katz, & Gomez-Mejia, 1997) that try to limit managerial self-interested behavior and associated residual losses. The former is more common where transaction costs are low while the latter is more common with higher transaction costs often found in labor contracts (Jensen, 1983; Williamson, 1985). While agents have incentive to validate their efficacy to owners to reduce the threat of agent change, agents facing monitoring and incentive alignment programs also have incentive to minimize the impact of those programs.

Agents engage in bonding activities (e.g., contractual guarantees, behavioral guarantees, voluntary limits on decision-making) in an attempt to limit the need for and effectiveness of owner monitoring and incentive structures (Jensen & Meckling, 1976). Even further, there is evidence that agent managers actively work to manipulate monitoring mechanisms (Harris & Bromiley, 2007). This managerial activism and bonding involves concessions, which reduce the pecuniary and non-pecuniary benefits managers derive from their employment (e.g., increased workload, riskier employment and riskier compensation). However, there are benefits to bonding as it provides more optimal outcomes for managers in terms of their ability to act in self-interested ways given owner monitoring efforts (Jensen & Meckling, 1976). In essence, bonding can be viewed as a form of insurance (Mahoney, 2005), whereby the agent is sacrificing a portion of their short-term utility to sustain or "insure" losses on that same utility in the future.

3.2 Agent Managers and Managerial Self-interested Behavior

The agency theoretic principal-agent problem is often applied to owners and managers, whereby these two parties have divergent self-interests that inform their interactions and their individual behavior (Jensen, 1983; Jensen & Meckling, 1976). When a decision places owner value-maximizing goals at odds with managers' self-interests, managers have to make a choice regarding the nature of their decision. Self-interest motivates managers to engage in self-serving behavior (Eisenhardt, 1989). However, there is also evidence that managers tend to behave in a way such that they maximize their behavior relative to expectations (Sakhartov & Folta, 2013). Together these observations suggest that managers are managing toward owner expectations but, given an opportunity such as low owner visibility, managers will take advantage of self-serving opportunities when they arise. Consistent with this perspective, there is evidence that managers

are likely to pursue self-interested behavior when it is difficult for investors to monitor their decisions (Amihud & Lev, 1981).

Risk aversion is a form of self-interest most often addressed in the agency literature as a way to ensure employment stability and personal wealth (Amihud & Lev, 1981; Wiseman & Gomez-Mejia, 1998). The conflict of interests arises because managers prefer risk-averse behaviors and investments to maintain employment and financial security but owners are risk-neutral (Eisenhardt, 1989). Even though risky decisions may add value to the firm, managers prefer cautious or risk-averse decisions, which are often not consistent with owners' value-maximizing goals. In addition to their interest in preserving their wealth and employment, there is evidence that top executives are also interested building their legacy (Hambrick & Fukutomi, 1991; Matta & Beamish, 2008) and amassing power (Baldenius et al., 2014). These self-interested tendencies can be realized through financial slack or reserves, as managers try to protect the firm against any large losses and maintain excess resources for investments of their choice (Jensen, 1986; O'Brien, 2003).

Considering the prior observation that managers have more opportunity to express their self-interested tendencies when investors are not able to closely monitor manager decisions, it is likely that a self-interested behavior, such as amassing financial reserves, is more likely to happen when this activity is less visible to owners. Industry-specific accounting-based activity is of particularly low visibility to investors. The parallel between accounting activity and visibility is most evident in the literature on earnings management, whereby managers use accounting actions (e.g., drawing down reserves, postponing an accounting charge) to manipulate or "manage" earnings to project stronger earnings per share results to the external market than truly underlie the financial position of the firm (Healy & Wahlen, 1999). While recent accounting

scandals have led to more scrutiny over accounting actions toward earnings management from professionals or industry insiders, such as auditors and securities analysts, these accounting actions are still largely not well understood by the average investor (Graham et al., 2005). On the other hand, "real" actions (e.g., decreasing R&D spending, delaying a new project, repurchasing shares) are a broadly visible and more easily understood alternatives to managing earnings (Graham et al., 2005). Thus, while investors understand when managers cut costs associated with R&D or advertising to increase earnings in the short-term, investors are less likely to detect changes in accounting behavior used to manage earnings.

As information intermediaries (Luo et al., 2015), analysts are more likely than investors to detect earnings management behaviors (Healy & Wahlen, 1999; Hirst & Hopkins, 1998). Evidence shows that among all non-management groups knowledgeable about firm-level strategy, analysts are most accurate in their understanding of industry-specific firm level strategy (Chen et al., 1993). However, analysts can exercise discretion in how much they choose to draw attention to managerial accounting actions (Johnston, Leone, Ramnath, & Yang, 2012)[1], particularly industry-specific accounting actions where managers and industry-aligned analysts have specialized expertise (Groysberg & Lee, 2009; Zuckerman, 2000) but investors do not. Thus, in the domain of industry-specific accounting actions, both managers and analysts have more flexibility and discretion because these actions are not as visible to most investors.

In the next section I will discuss the role analysts play in the agency relationship between managers and owners, in particular their role in drawing owner attention toward or away from self-interested managerial behavior.

[1] These authors found evidence that analysts often do not adjust forecasts for unusual 14 week quarters. They conclude this is the result of intentional or unintentional ignorance. While they tend to lean toward ineptitude as the explanation for individual analysts, they point toward the role of intentional choice when considering patterns in consensus errors, which is the level of analysis of focus here.

3.3 Analysts Monitor Managerial Behavior

Securities analysts are often considered to be an external monitoring mechanism over managerial behavior (Gentry & Shen, 2013; Wright et al., 2002). In addition to internal controls, such as boards (Fama & Jensen, 1983b) and incentive alignment programs (Eisenhardt, 1989; Tosi et al., 1997) aimed at minimizing managerial agency costs, there are external parties, such as the capital market and its participants, that also play an exogenous role in controlling agency costs (Wright et al., 2002). In their seminal work that contributes to our current understanding of the owner-manager agency relationship and associated agency costs, Jensen & Meckling (1976) note that, even though securities analysts are external to the firms they cover, they should reduce residual agency costs incurred by owners, which Jensen & Meckling attribute specifically to the analysts' role in monitoring managerial behavior.

Analysts monitor managers by setting clear expectations for managers and applying industry expertise toward analyzing managerial decisions. Owners are not in position to perform these monitoring functions because many owners may have many different expectations and they lack expertise. Dispersed ownership exacerbates agency costs (Berle & Means, 1991 [1932]) because owner monitoring becomes ineffective when managers are unable to discern clear performance expectations. Furthermore, public owners are most often ill-informed owners, such that they do not have comprehensive knowledge of the firm or industry in which they have taken ownership. Owners have hired professional managers because of the managers' expertise, underscoring owners' information deficit when it comes to developing expectations and adequately assessing behavior towards expectations. Evidence shows analyst recommendations are most accurate when looking within industry (Boni & Womack, 2006; Groysberg & Lee, 2009), even attributing positive value to firm managers who maintain industry alignment

(Zuckerman, 1999). Analysts use this industry expertise to develop subjective perceptions and heuristics that guide their assessments of the future value of the firm (Bradshaw, 2004). Furthermore, analysts are the most accurate outside strategy informant (Chen et al., 1993), highlighting their firm-specific expertise. Thus, not only do analysts consolidate the voices of investors by setting clear goals for managers, they also filter and synthesize information using their industry expertise.

As monitors, analysts fill some of the gaps inherent in public ownership by setting clear expectations and holding managers accountable to these goals through their recommendations. Specifically, analyst forecasts set visible and measurable expectations for owners to benchmark managers against while recommendations assist in evaluating managerial performance and decision-making overall. The behavioral agency model points out that managers are motivated by employment security and wealth accumulation (Wiseman & Gomez-Mejia, 1998). Since analysts create clear, informed expectations that are connected to managers accomplishing these personal goals, then goal-setting theory holds managerial behavior will be directed toward meeting these expectations (Locke & Latham, 2002). Consistent with this assumption that analyst expectations are salient to managerial employment outcomes and personal wealth, there is evidence that negative analyst forecasts and recommendations lead to turnover among top managers (Puffer & Weintrop, 1991; Wiersema & Zhang, 2011) and that analyst coverage more strongly links managerial compensation to shareholder returns (Wright et al., 2002). Thus, as monitors for owners, analysts draw owner attention to poor firm performance with low forecasts and negative recommendations (Westphal & Clement, 2008; Zhang & Gimeno, 2010) and set clear performance goals for managers with their forecasts (Gentry & Shen, 2013; Washburn & Bromiley, 2014).

3.4 Analyst Forecast Optimism

Analysts play a critical information intermediary role in capital markets, controlling the visibility and evaluative quality of managerial behavior. Thus, when analysts' earnings forecasts are pessimistic it projects low confidence in management and draws investor attention to managerial behavior (Westphal & Clement, 2008; Zhang & Gimeno, 2010). Pessimistic earnings forecasts, with the scrutiny they draw from investors, do not provide a favorable environment for managers to exercise self-interested behavior.

Managers, however, do not view optimistic forecasts as universally favorable either. Scholars often characterize the manager and analyst interaction as a negotiation (Zhang & Gimeno, 2010) whereby managers want lower forecast targets to avoid missing an earning benchmark (Graham et al., 2005) and analysts want the most accurate forecasts to maximize their performance incentives (e.g. Hong & Kubik, 2003). Managers provide a range of public information, including press releases, conference calls, and earnings guidance (Charoenrook & Lewis, 2009; Washburn & Bromiley, 2014). The content of these public disclosures, in particular earnings guidance, is intended to place pressure on analysts to reduce overly optimistic forecasts (Cotter et al., 2006) because missing targets draws attention to managerial actions whereas meeting or exceeding targets does not (Graham et al., 2005). This suggests that managers prefer forecasts that are not overly optimistic because overly optimistic forecasts set expectations for which managers will be held accountable. Given that managers maximize their behavior relative to expectations (Sakhartov & Folta, 2013), with high expectations they have less opportunity to maximize their self-interested behavior.

Together, these observations suggest that analyst forecasts are favorable for managers to engage in self-interested behavior when these forecasts are increasingly optimistic, but this effect

dampens at high levels of optimism. Analysts set year-end and, typically, quarterly forecasts along a range of financial metrics at the start of a fiscal year, making modifications to these forecasts throughout the fiscal year. I focus specifically on earnings per share ("EPS") because of the emphasis both analysts (Ramnath et al., 2008) and managers (Graham et al., 2005) place on this particular financial metric. Optimism in analyst forecasts can be detected by looking at the difference between EPS forecasts at the start of the year and actual EPS results at the end of the year of the prior year. Positive differences indicate analysts, as a group, are projecting optimism, while negative differences indicate they are projecting pessimism.

Given these arguments, I expect forecast optimism to have a non-linear relationship with managerial self-interested behavior. Managers will increase their self-interested behavior as analysts issue more optimistic forecasts because increasing optimism in analyst forecasts lessens the burden of investor attention over managerial behavior. However, this relationship is not as strong at higher levels of optimism where overly optimistic targets set high performance targets for managers, forcing them to temper their self-interested behavior.

Hypothesis 1: Analyst forecast optimism has a quadratic relationship with managerial self-interested behavior such that the positive relationship between optimism and self-interested behavior flattens at high levels of optimism.

3.5 The Moderating Effect of Firm Performance

To test the strength of the relationship I developed between monitoring analysts and agent managers, I consider the goals of a common party: investor owners. Owner goals are centered on value-maximizing firm performance. Agent managers are expected to maintain adequate firm performance and analysts are expected to identify adequate firm performance,

calling out managerial self-interested behavior through their forecasts and recommendations. Earlier I explained the role of analysts in directing investor attention. However, actual results can also direct investor attention. When firm performance is strong investors do not have reason to scrutinize managerial self-interested behavior, particularly when analysts are also offering a positive outlook through optimistic forecasts.

Under conditions where owner goals are not passably met (i.e., firm performance is inadequate), investors are more likely to direct their attention to managerial behavior and agent managers are likely to make concessions on their self-interests to focus on owner goals (Aaldering, Greer, Van Kleef, & De Dreu, 2013). Highlighting the foundational role of owner expectations, managers tend to maximize their behavior relative to expectations (Sakhartov & Folta, 2013) because missing expectations puts managers at increased risk of losing their jobs. Thus, stabilizing firm performance becomes more important than trying to maximize personal utility from their employment. There is evidence that managers exercise less discretion when firms are experiencing financial hardships (Petroni, 1992). Furthermore, managers have less slack so they do not have the ability to exercise discretion (Hart, 1983). This evidence suggests that managers curb their self-interested behavior when firm performance is weak because investors are paying close attention to their behavior and they have little slack to use self-interestedly.

Similarly, firm performance is critical to analyst job security. Analysts looking to attract new investors and retain their current customer base (Irvine, 2004) depend on positive performance in the stocks they cover, even sometimes limiting their coverage to firms about which they have optimistic views (McNichols & O'Brien, 1997). Thus, a drop in firm performance can impair the relationships analysts have with their investor customers. This

suggests that analysts will be stricter monitors when firm performance is weak, placing added downward pressure on managerial self-interested behavior.

If analysts are stricter monitors when firm performance is weak and managers ignore their self-interests when firm performance is weak then managerial self-interested behavior should be suppressed when performance is weak compared to when firm performance is strong. Furthermore, the effect of forecast optimism on managerial self-interested behavior should be weaker among low-performing firms as managers shift their attention away from changes in analyst forecasts and toward meeting owner expectations. On the other hand, as firms perform better, investors are not as attentive, particularly when analysts are also optimistic, having a multiplicative effect on managers' ability to be self-interested. These observations suggest that firm performance has a strengthening effect on the relationship between analyst forecast optimism and managerial self-interested behavior.

Hypothesis 2: Firm performance strengthens the relationship between analyst forecast optimism and managerial self-interested behavior.

3.6 The Bond Managers Create with Analysts

3.6.1 Analysts and private information. Despite their profession emerging to fill several critical monitoring functions for investors, analysts also can act self-interestedly, sometimes in ways that conflict with investor interests. Analysts' self-interested goals include employment stability (Groysberg, Healy, & Maber, 2011a), professional recognition (Stickel, 1992), power among their peers (Groysberg et al., 2008; Rao et al., 2001), career advancement (Cohen et al., 2012), and commissions (Irvine, 2004). These goals are most likely achieved when they are routinely

accurate in their outputs (Groysberg et al., 2011a; Hong & Kubik, 2003; Ramnath et al., 2008). However, accuracy is challenging for analysts due to the uncertainty of future earnings streams (Bradshaw, 2004). Gathering information to reduce this uncertainty is challenging and costly for analysts (Feldman et al., 2014), providing them with incentive to directly seek information from managers that would help inform forecasts regarding future earnings.

There is evidence that analyst optimism reinforces open information channels (Das, Levine, & Sivaramakrishnan, 1998; De Bondt & Thaler, 1990), suggesting analysts are motivated to be optimistic to gain information from managers. However, it is not as clear why managers would relinquish information that analysts could ultimately use against them. The next section addresses this gap using agency-bonding arguments. I will argue that managers offer analysts unique access to firm executives and operations to bond with them, knowing the importance analysts place on accessing private information.

3.6.2 Managerial bonding through accessibility. Using agency theoretic bonding arguments in an effort to preserve some of the utility agent managers draw from their employment, managers will expend bonding costs directed toward monitoring efforts to reduce the effectiveness or intensity of the monitoring (Jensen & Meckling, 1976). Analysts are intermediaries positioned squarely between owners and managers (Harris & Souder, 2004; Luo et al., 2015), operating as relevant managerial monitors (Wright et al., 2002) but also accessible to managers as well. Given the relevance of analysts as monitors and their intermediary position, managers are likely to incur some bonding costs to reduce the intensity of analyst monitoring, which should allow managers to pursue their self-interested goals.

One such bonding mechanism managers have at their disposal that is meaningful to analysts is information disclosure. Managers have identified analysts as their target audience for the majority of the disclosures they make (Graham et al., 2005). Through disclosures, managers are actively trying to shape analyst perceptions (Healy & Palepu, 2001) and analysts ascribe value to information from managers (Healy, Hutton, & Palepu, 1999). However, analysts are aware of the conservatism in public information provided by managers (Cotter et al., 2006) and, moreover, investors are also aware, leading analysts to over-adjust their forecasts to compensate for investor knowledge (Löffler, 1998). Since incorporating public information does not allow analysts to provide unique value to investors, this evidence suggests that public managerial disclosures are not beneficial to either managers or analysts.

Analysts typically balance public information received from managers with their own segment research (Healy et al., 1999), prior experience with management disclosures (Williams, 1996), and, in particular, unobservable private sources of information (Bernhardt et al., 2006; Chan & Hameed, 2006; Clement & Tse, 2005; Lim, 2001). Specifically, the forward-looking component of analyst outputs is the most subjective (Bradshaw, 2004), and private information from managers improves accuracy on this component (Barron, Kile, & O'Keefe, 1999). Thus, it is in the private domain that information yields benefit to analysts by allowing them to use this information to differentiate their forecasts, potentially garnering professional recognition and wealth (CFA Institute, May 28, 2008; Hong & Kubik, 2003).

In a post RegFD environment selective disclosure on the part of managers is no longer allowed, resulting in curtailment of overt managerial private disclosures to analysts (Agrawal et al., 2006; Cohen et al., 2010). Thus, I instead focus on managerial accessibility, a less overt form of private disclosure whereby managers allow analysts access to management and internal

operations but the analysts must use the private evidence gleaned from this transparency to draw their own conclusions. Indeed there are indicators that it is precisely this type of transparency – management tone, informal conversations, observations of facilities and operations – that analysts seek to accurately develop their forecasts and recommendations (Hershberg, 2012). Therefore, managers can bond with analysts by being accessible to analysts.

Bonding involves the agent incurring some cost (Jensen & Meckling, 1976) and being accessible invites costs associated with added scrutiny. In a survey of executives, Graham and colleagues (2005) found that managers have personal concerns about disclosing information to analysts, including challenges to managers' careers and reputations and setting a precedent for future disclosures that will exacerbate and extend the aforementioned personal costs of disclosure. An informed analyst can levy more consequential challenges to top managers' judgment and ability, resulting in negative employment (Puffer & Weintrop, 1991; Wiersema & Zhang, 2011) and compensation outcomes (Wright et al., 2002). However, an uniformed analyst is likely to be more pessimistic (Lim, 2001), depleting investor confidence in managerial behavior.

Thus, despite the risks and costs associated with managerial accessibility, and even in a post-RegFD environment, managers are motivated to bond with analysts to lessen the impact of analyst monitoring and develop a longer-term productive relationship with analysts. By being accessible to analysts, managers not only guide analysts' outputs but also accumulate goodwill with analysts who use the private information they glean toward their own self-interests.

3.6.3. Analyst forecast optimism and managerial accessibility. Managers are more likely to bond with analysts who issue forecasts that managers perceive as favorable because managers

are more likely to take on the costs of bonding with analysts when they ascribe personal benefit to analyst forecast optimism. Recognizing the managerial motivation for providing access, there is evidence that desire for managerial accessibility motivates analysts' forecast optimism. Specifically, analysts underreact to negative information because attaining or maintaining management access is critical (Lim, 2001).

In summary, managers recognize that analysts have self-interests, in particular analysts desire access to management and internal operations, and managers will bond with analysts along their self-interests by increasing the accessibility of these potentially rich information sources for analysts. Furthermore, managers are more motivated to bond with analysts when analysts are issuing favorable forecasts. Again, forecasts are favorable when they are optimistic, but this effect dampens when forecasts are overly optimistic, again indicating that forecast optimism has a non-linear relationship with managerial accessibility.

Hypothesis 3: Analyst forecast optimism has a quadratic relationship with managerial accessibility such that the positive relationship between optimism and accessibility gets flatter at high levels of optimism.

3.7 Summary of the Agency-theoretic Approach to the Manager-Analyst Interface

To this point I have extended the agency perspective on the relationship between managers and analysts to argue that their interactions are fueled by a bonding choice, whereby managers are choosing to be accessible, inviting additional scrutiny over their own behavior, to preserve their self-interests. Moreover, managers are more likely to bond with analysts when analysts are issuing favorable forecasts. Specifically, managers consider forecasts that are

optimistic as favorable because pessimistic forecasts invite investor scrutiny that limits managers' ability to pursue their self-interested goals. But this positive relationship between optimistic forecasts and managerial self-interested behavior dampens when forecasts are overly optimistic because these forecasts effectively set high targets that managers are forced to manage toward encroaching on their ability to act self-interestedly. Furthermore, when firm performance is strong and analysts are optimistic, investors have little reason to scrutinize managerial behavior. When firm performance is weak, investors will likely pay attention to managerial behavior regardless of analysts' forecasts. Together these arguments suggest that firm performance strengthens the positive relationship between analyst forecast optimism and managerial self-interested behavior.

Through this agency perspective, when analysts are strictly monitoring managerial behavior they will revise their forecasts to accurately reflect all information, calling attention to self-interested behaviors. However, when analysts are currying favor with managers to attain access analysts are less likely to reflect self-interested behavior in their forecasts, reducing the visibility of, and even validating, managerial behavior to owners, thereby providing managers with the opportunity to engage in self-interested behavior and the incentive to bond with analysts by providing the accessibility they desire. This suggests that manager and analyst self-interested goals, while different, are interdependent, motivating a private interface between managers and analysts.

Furthermore, the bonding relationship I developed is not compulsory – it is self-motivated and contingent on the associated costs. When managers are accessible to analysts they risk added scrutiny over their discretionary behaviors. Thus, the motivation to engage in bonding is contingent on the expectation of reciprocity. Without reciprocity, the bond breaks

down, as managers are not motivated to bond, highlighting the social dilemma involved in these interactions.

Indeed, this type of opportunistic interdependence is very risky for both managers and analysts and not well documented empirically in the management literature (von Werder, 2011). In the next section, I respond to von Werder's (2011) call for a more concrete understanding of self-interested options between stakeholder groups by further developing this model of the manager-analyst interface. Specifically, I will use game-theoretic reasoning to capture real constraints placed on the agency model of the manager-analyst interface, maintaining the underlying agency ideas of self-interest and bonding but incorporating mutual dependence between managers and analysts using game-theoretic concepts of reciprocity and assurance. With indicators that managers are engaged with analysts more fully than the literature captures (Hershberg, 2012; Turner, 2005), I develop this game-theoretic contingent model of agency theory consistent with work calling for models that incorporate contextual realities (Harris et al., 2013).

CHAPTER 4: A GAME THEORETIC APPROACH TO THE MANAGER AND ANALYST INTERFACE

4.1 Application of Game-theoretic Reasoning to the Manager-Analyst Interface

"Game theoretic modeling is the appropriate tool when studying strategic interactions between agents with differing goals" (Saloner, 1991: 128-129). As discussed in the prior chapter, agency theory is based on the premise that owners of public firms are dispersed and ill-informed, so they hire agent managers to make decisions on their behalf and enlist analysts to inform their ownership holdings, effectively giving analysts monitoring power over managerial actions and decisions. In order to reduce the restrictive power monitoring has on their self-interests, managers have the incentive to engage in bonding activities with analysts, highlighting the interdependence of manager and analyst self interests. Specifically, the utility managers receive from making self-interested decisions depends on analysts' assessments of those decisions. Likewise, analyst self-interests depend on private firm-level information made accessible to them by managers. Thus, with highly interdependent goals, the interaction between managers and analysts is appropriate to consider using game-theoretic reasoning.

Consistent with Postrel's (1991) recommendation, I use game-theoretic reasoning as a tool to illustrate my arguments and place constraints on current theory, not as a strategic management theory itself. Specifically, game-theoretic reasoning organizes and shapes existing theory on managers and analysts as they interact. Agency theory provides an understanding of why the manager-analyst relationship emerged and how managers' and analysts' actions are interdependent. While agency theory illuminates the bonding mechanism underlying the interaction between managers and analysts, it falls short of capturing the dominant motivation for

managers to bond in the first place. Game-theoretic reasoning contributes by placing interdependent constraints on manager and analyst interactions, both incorporating their expectation of the others' reciprocity. In other words, how do managers behave, given their expectations about how analysts will behave? Furthermore, game-theoretic reasoning informs the salient equilibrium points for these strategic interactions (Camerer, 1991), contributing to our understanding of the magnitude of relative payoffs for managers.

4.2 Reciprocity

Game-theoretic analysis addresses social dilemmas where players are making decisions that affect both their own individual outcome and the collective outcome of all players in the game. A key tenet of any of these social dilemmas is that the players' outcomes are interdependent. Because the other player's outcome will affect their own, each player has to make assumptions about what they believe their counterpart will do. They look ahead to all possible outcome combinations and reason backwards to make their decision, considering how the other player will respond along the way (Camerer, 1991; Dixit & Nalebuff, 1991). Thus, the expectation of the type of reciprocity, either exchanging mutually beneficial resources or both withholding those resources, guides each player's decision process (Parkhe, 1993).

This suggests that managers likely let their payoffs inform their decisions (see Figure 2), such that their payoffs provide a feedback loop to their subsequent decision-making. Moreover, repeated interactions (Arend & Seale, 2005) and past experience together (Chatain, 2011; Saloner, 1991) inform each player's subsequent decision to cooperate or not. Thus, regardless of who activates the exchange between managers and analysts, since each builds positive experience by accumulating benefits from the interaction they are more likely to engage by

reciprocating with a behavior that provides the other with a benefit (Agarwal, Anand, Bercovitz, & Croson, 2012). This suggests the access managers provide analysts is at least partially dependent on the benefit or loss they are experiencing in their self-interested behavior.

Earlier I argued that favorable forecasts are positively related to accessibility with managers ascribing value to favorable forecasts because they expect to see a benefit to their self-interested behavior. Here I refine that relationship based on the forces of reciprocity and realized benefit for managers. Optimistic forecasts are only related to managerial accessibility when managers realize a benefit to their self-interested behavior, attributing that benefit to the optimistic forecasts and reciprocating with access. This suggests a fully mediated model, as the effect of optimistic forecasts on accessibility is fully mediated by the actual self-interested behavior manager's realized:

Hypothesis 4: Managerial self-interested behavior fully mediates the relationship between analyst forecast optimism and managerial accessibility.

4.3 Assurance Games

While reciprocity is a characteristic relevant to a range of game-theoretic analyses of cooperation (Axelrod, 2006 [1984]), there are different types of social dilemmas that lead to different outcomes. The most common social dilemma game is the Prisoner's Dilemma. However, several authors have argued that assurance games are more prevalent and accurate models of social dilemmas than Prisoner's Dilemma games (Agarwal et al., 2012; Agarwal et al., 2010; Kollock, 1998) because assurance games allow for multiple equilibrium outcomes where coordination among players leads to the best individual and collective outcomes. In this section,

I will distinguish between a cooperation game and a coordination game, highlighting the critical distinctions. Then, I will use these criteria to argue that managers and analysts are most often engaged in an assurance game informing the magnitude of the payoffs they are able to realize.

4.3.1 The Prisoner's Dilemma vs. The Stag Hunt. To understand the relevance of assurance game-theoretic reasoning to the manager-analyst interface, it is helpful to distinguish the more widely known Prisoner's Dilemma game from the Stag Hunt, an assurance game (for a detailed discussion on the differences between prisoner's dilemma and assurance games see Agarwal et al., 2010; Kollock, 1998). The Prisoner's Dilemma game addresses the specific issue of cooperation – should I cooperate with the other player or should I defect (not cooperate)? The assumption in the Prisoner's Dilemma game is that by cooperating both players are sacrificing some of their individual payoff to reach the cooperative outcome, and if the other does not choose to cooperate, then the player that cooperated will have the worst possible payoff. Thus, in a typical prisoner's dilemma game, the rational individual behavior is to defect because it is only when a player defects that they avoid the worst outcome. There is single equilibrium where both players defect because the payoffs are structured such that the largest payoff to a single player comes when that player defects and the other cooperates, followed by mutual cooperation, then mutual defection, and, finally, when the focal player cooperates while the other defects.

Different than a cooperative game, an assurance game is really a coordination game, which changes the relative value of the individual payoffs (Kollock, 1998). While cooperation involves trading off individual outcomes for the good of the collective outcome by working together, coordination is organizing different activities toward more effective outcomes for each individual. Specifically in the Stag Hunt game, an assurance game, players are choosing to hunt

a stag or a hare. The two individuals need to coordinate their decisions in order to effectively hunt the stag, which is the largest payoff for both. An individual can instead choose to hunt the hare and receive a certain, but significantly smaller, payoff. If one individual chooses to hunt the hare, and the other the stag, the one that chooses the stag will get nothing and the one that chooses the hare will have an easier time hunting a hare because no one else is also trying to hunt the hare. Thus, in a coordination game the outcome with the highest payoff to both players is the outcome where players have coordinated their activities switching the relative value of the top two outcomes in the prisoner's dilemma game. Now mutual coordination yields the highest payoff, providing incentive for both players coordinate.

Furthermore, in assurance games there are multiple equilibria. Creating the name of this game, players will coordinate as long as they are ***assured*** that the other will coordinate, thus mutual coordination is an equilibrium outcome with the maximum payoffs for both. However, absent assurance, mutual defection, the only equilibrium in a prisoner's dilemma, is also an equilibrium outcome as both players can minimize their risk. The former is known as the payoff-dominant strategy and the latter is known as the risk-dominant strategy (Harsanyi & Selten, 1988). The key issue in an assurance game is trust; thus, these types of games are also known as trust dilemmas. Players can signal assurance by posting an economic bond (Mahoney, 2005) or making a persuasive commitment (Schelling, 2011) and hoping the other player will reciprocate. In line with the earlier discussion on reciprocity, if they do reciprocate the players will converge on the coordination outcome as both players become assured the other will coordinate their activities. If the other player does not reciprocate, they will converge on the mutual defection outcome because the original player is unlikely to be willing to post that economic bond again.

McAdams (2008) provides an effective example that highlights the difference between cooperation and coordination games using the prisoner's dilemma. In the straightforward Prisoner's Dilemma the cooperative outcome is defined by both prisoners keeping quiet so they serve minimal jail time. However, when the evidence against them is weak and a strong alibi would set them both free the relative payoffs are rearranged because they each could achieve their best payoff by coordinating. As long as they coordinate in confirming each other's alibi then each can maximize their payoff and go free.

To this point I have demonstrated that an assurance game, like Stag Hunt, is more applicable than the cooperative prisoner's dilemma game under two basic conditions. First, when coordination between the players yields the best individual payoff to each player, then an assurance game is most appropriate. Second, there must be a path to that coordinated outcome. In other words, assurance must be possible between the players. This is possible when each player can post a bond by making a commitment that is both meaningful to the other player, and detrimental to the player posting the bond absent reciprocation from the other player. Next, I will demonstrate that these conditions can be found in the interaction between managers and analysts.

4.3.2 Managers and analysts in an assurance game. Consider again McAdams' (2008) modified prisoner's dilemma story in context of managers and analysts. Like the prosecutors in the second scenario, dispersed owners have a "weak case" against managers and analysts, such that they are relatively ill-informed – unable to monitor managerial behavior and unable to ensure analyst monitoring is effective. In this situation, analysts and managers can effectively coordinate their behaviors to maximize their individual outcomes such that analysts validate

managerial behavior through optimistic forecasts and managers help enlighten analysts by providing analysts internal access. Managers and analysts are engaged in a social dilemma because they have these highly-interdependent outcomes. In particular, as the parallel is drawn with McAdam's illustration of an assurance game, managers and analysts can choose to coordinate their behaviors to maximize their individual payoffs.

The behaviors that managers and analysts are coordinating must be relevant to the other player, difficult for the committing player to undertake and difficult for the receiving player to assess the magnitude (Schelling, 2011). Both managers and analysts have the ability to give relevant assurances to the other player that benefit the other and cost themselves. When managers are accessible to analysts, analysts benefit but managers place themselves at risk for added scrutiny. When analysts adjust forecasts to be favorable for managers, managers benefit but analysts place their reputation at risk. Furthermore, both of these activities are difficult to assess in terms of magnitude, making it hard for either player to gauge how much more reciprocity they can extract from the other player if they choose to coordinate. Analysts don't know how accessible managers are being relative to the amount of information they have at their disposal. Managers, on the other hand, don't know how much the analysts are willing to adjust their forecasts and how rigorously they will hold managers to the forecasts.

Beyond having the ability for both players to provide meaningful assurances to the other, managers and analysts are likely to be playing an assurance game because both a risk-dominant strategy and a payoff-dominant strategy exist. Work on social dilemmas has found that coordinated cooperation can emerge as a dominant strategy and second equilibrium to the traditional "mutual defection" equilibrium of a Prisoner's dilemma game when there is a chance for repeated interaction, ability for players to communicate, and available information on the

other player's past behavior (Axelrod, 2006 [1984]). With well-known quarterly interactions; frequent, regulated and even institutional communication through investor relations departments (Rao & Sivakumar, 1999); earnings calls (Frankel et al., 2010); other more informal visits and interactions (Hershberg, 2012); and publicly available information on both managers and analysts past behavior, managers and analysts meet the criteria that increases their potential to coordinate their behavior. Again, under conditions where an alternate equilibrium exists, assurance games should be considered as more accurate models of the interaction (Kollock, 1998).

4.3.3 The relative value of managerial payoffs. The pattern of the payoffs defines the strategic interaction among the interacting parties (Parkhe, 1993). Figure 2 depicts managers' decision tree and resulting payoffs. Figure 3 provides a more detailed look at managers' payoff matrix when engaged in an assurance game with analysts. This figure describes the potential managerial payoffs, highlighting both the interdependence of managers and analysts and the multiple forms that can characterize their interface. Again, assurance games are characterized by the order of their relative payoffs. Within each of the four possible sets of payoffs, I will argue that there is a relative order of payoff magnitude for managers similar to payoffs in an assurance game.

Mutual Coordination (Q1). When both managers and analysts decide to coordinate their behaviors they have chosen their payoff-dominant strategy. Both parties are assured that the other will coordinate their behavior so both take the risk of bonding with the other. In this case, managers are accessible to analysts, providing analysts with the opportunity to gather unique

information. Analysts issue favorable forecasts allowing managers to engage in self-interested behavior.

Analyst Dominant (Q2). When analysts defect, choosing their risk-dominant strategy, but managers attempt to bond, choosing their payoff-dominant strategy, analysts will benefit from this inconsistency and managers will suffer in the short-term, making this state unsustainable because of the imbalance in payoffs. In this case, managers are accessible to analysts but analysts continue to be strict monitors, offering unfavorable forecasts. This is the worst outcome for managers because analysts now have access to private information and are exposing any evidence of non-value-added managerial behavior through pessimistic forecasts or evidence of potential value-added activity through overly optimistic forecasts.

In line with assurance game-theoretic reasoning that finds asymmetric strategies unsustainable (Agarwal et al., 2010; Kollock, 1998), when managers act favorably toward analysts and analysts do not similarly reciprocate favorably managers are likely to subsequently react negatively (Westphal & Clement, 2008). This suggests that, when managers are moderately accessible and analysts do not reciprocate with favorable forecasts, managers are subsequently likely to restrict access for analysts.

Manager Dominant (Q3). Alternatively, when managers defect, choosing their risk-dominant strategy, but analysts choose their payoff-dominant strategy, managers benefit from the asymmetric strategies. In this case, analysts issue optimistic forecasts but management provides inadequate internal access. Managers benefit from this forecast favorability because they are able to engage in slightly more self-interested behavior than they could when analysts issue

unfavorable forecasts. However, managers still cannot maximize their self-interested behavior because, just as in the analyst dominant situation, the asymmetry is unsustainable, suggesting analyst forecast favorability will be fleeting when managers do not reciprocate. Furthermore, analysts are able to make quick adjustments to their forecasts by issuing revised forecasts, which contributes to the transient nature of a manager dominant payoff.

Mutual Defection (Q4). When both managers and analysts defect, they have both chosen their risk-dominant strategy. Both parties do not believe the other is willing to coordinate their behavior so they are not willing to take the risk of bonding with the other. In this case, managers are not accessible to analysts because they have no expectation that analysts will reciprocate with optimistic forecasts. Since accessibility without the potential for more lenient forecasts will only invite unwanted scrutiny on their decisions, managers choose to be minimally accessible. Accordingly, analysts, with little expectation of meaningful internal access, monitor managers closely, scrutinizing managerial behavior using all public information available. Managers can exercise some self-interested behavior by limiting internal accessibility but, absent external validation, there are limits to their ability to act self-interestedly without challenge.

These four payoff outcomes suggest that the value of self-interested behavior to managers is highest when both coordinate and lowest when there is asymmetry, such that managers cooperate by being accessible to analysts while analysts defect by issuing unfavorable forecasts. However, when the asymmetry is reversed with managers limiting access and analysts issuing optimistic forecasts, managerial self-interested behavior is relatively high, second only to the state of mutual coordination. When both players choose not to coordinate, the value of self-

interested behavior to managers is modest although not as low as when managers expend goodwill to bond without reciprocation from analysts. Formally, these arguments suggest the following inequalities:

$M_{AO} > M_{IO} > M_{IP} > M_{AP}$

where M = Managerial self-interested behavior

A(I) = (In-) Accessibility

O(P) = Optimistic (Pessimistic) analyst forecasts

4.3.4 The implications of assurance games between managers and analysts. These inequalities have empirical implications. As argued earlier and validated through game-theoretic reasoning as well, when analyst forecasts are more optimistic managers can be more self-interested ($M_O > M_P$) regardless of how accessible managers choose to be. However, when considering the impact of accessibility on managerial payoffs, this basic relationship changes.

Schelling (2011) theorized that coordination games have highly polarizing effects because there is no stable focal point except at the extremes – complete coordination or contention. Thus, players quickly move to either of the two equilibria and either "over"-coordinate (i.e., collude) or completely neglect one another. Consistent with this effect, manager payoffs likely polarize when manager and analyst efforts to coordinate are considered simultaneously. When managers are accessible to analysts, in the absence of favorable analyst forecasts they suffer because not only can they not act self-interestedly without being scrutinized but they have also given analysts access to private information that can assist analysts in their

scrutiny or target setting. Thus, when forecasts are pessimistic and managers are accessible, managerial self-interested behavior should decline more steeply.

Schelling's observations also suggests that assurances between managers and analysts create a context where managers are less likely to view overly optimistic forecasts as placing constraints on their behavior. Recall that I argued, on average, managers define the favorability of forecasts in the context of analysts as monitors, constraining managerial behavior. As monitors, analysts strictly relay the information they have in their forecasts. When analysts issue pessimistic forecasts, they call into question managerial decision-making and draw negative investor attention to managerial behavior. When analysts issue highly optimistic forecasts they believe the firm has potential. This optimism sends positive signals to investors deflecting their scrutiny, but from the manager's perspective analysts are effectively setting very rigorous targets that constrain managerial self-interested behavior because if managers miss these targets they could attract negative investor attention (Graham et al., 2005). However, if analysts "over-coordinate" with managers, relaxing their role as strict monitors then this changes how managers view these overly optimistic forecasts. Under conditions of mutual coordination, managers have assurances that analysts will make very modest revisions to these optimistic forecasts if necessary throughout the year without drawing investor attention because analysts want to maintain internal access. Amir and Ganzach (1998) find evidence for this type of leniency in analysts' forecasts. These authors argued that analyst leniency is revealed through optimistic forecasts and their moderation in negative short-run forecast revisions. This suggests that analysts can be optimistic at the start of the year but still achieve their own goals of year-end accuracy by making modest, non-attention drawing forecast revisions throughout the year.

Overall, analyst leniency calls for a more linear relationship between forecast optimism and self-interested behavior when analyst forecasts are optimistic.

By simultaneously considering manager and analyst decisions, game-theoretic reasoning changes the relationship between analyst forecast optimism and managerial self-interested behavior. First, when managers are accessible the relationship between optimism and self-interested behavior should be stronger than when managers are inaccessible because accessibility provides assurances to analysts who should reciprocate with more optimistic forecasts, allowing more self-interested behavior. Second, the shape of the non-linear relationship between optimism and self-interested behavior should be more linear when managers are accessible because, when managers and analysts are cooperating, managers no longer view overly-optimistic forecasts unfavorably. These arguments suggest the following hypotheses:

Hypothesis 5a: Managerial accessibility strengthens the relationship between analyst forecast optimism and managerial self-interested behavior.

Hypothesis 5b: Managerial accessibility changes the quadratic relationship between analyst forecast optimism and managerial self-interested behavior such that when managers are accessible the relationship between analysts forecast optimism and managerial self-interested behavior is more linear.

CHAPTER 5: METHODS

5.1 Setting

5.1.1 Industry setting. I use a controlled industry setting to isolate a discrete proxy for managerial self-interested behavior, which can vary widely across industries owing to differences in industry characteristics and is difficult to observe within many industries. Similar to past work, isolating a variable of interest in an industry where it is observable can provide critical insight into a commonly theorized, but difficult to measure, construct (e.g., Souder & Shaver, 2010). Furthermore, I identify an established industry to control for the effects that industry emergence has on analysts' treatment of firms within an industry. I am interested in firm-level phenomena and analysts only treat firms within an industry uniquely in their forecasts and recommendations once the industry has matured and been legitimated (Navis & Glynn, 2010). Thus, I need to identify a non-emergent industry where managerial self-interested behavior is observable.

The theory I develop hinges on the visibility of managerial self-interested behavior to investors. Analysts direct the attention of investors, choosing to draw attention to managerial self-interested behavior (defecting from managers) or not (cooperating with managers). Thus, this theory requires a measure of managerial self-interested behavior that is not obvious to the average investor and owner but could be identified by an industry expert such as a securities analyst. This is critical because it underscores the industry expertise that analysts provide the capital market and distinguishes analysts from retail investors. If the public could easily identify and assess managerial self-interested behavior then securities analysts would struggle to stay relevant. Furthermore, imperceptibility of this activity is important to allow managers discretion in expressing self-interested behavior. Graham and colleagues (2005) found that managers view

real investments, such as spending on R&D, as not only more visible actions, but better understood by their public audience than accounting actions, such as reserve behavior. Thus, accounting measures are more likely to satisfy my criteria.

Cash holdings (O'Brien & Folta, 2009) and aggregate accruals (McNichols, 2000) have been used as measures with managerial discretion because managers can use cash and accruals for discretionary purposes. Cash measures do send external signals that invite visibility (O'Brien & Folta, 2009) and aggregate accruals obscure managerial behavior in a composite measure (McNichols, 2000). However, specific accruals, such as insurance reserves, are stronger indicators of managerial behavior (McNichols, 2000) and receive less external attention (Gaver & Paterson, 2004). Reserve decisions fall in the domain of accounting activity (Gaver & Paterson, 2004) rather than "real" business activity and, as a result, retail investors find accounting activity less accessible (Graham et al., 2005), allowing both managers and analysts to exercise discretion. Consistent with these arguments, insurance reserves are used as a proxy for managerial discretion in the accounting literature (e.g. Beaver et al., 2003; Petroni, 1992).

Not only is the level of reserves at the discretion of managers, but they are also an indicator of managerial self-interested behavior. Because of the accounting standards governing the insurance industry, insurance companies will hold money in reserves to fulfill future benefit and claim obligations. Managers can exercise significant discretion in the amount of reserves they hold because of the uncertainty surrounding the actual claim and benefit obligations (Nissim, 2010). Holding additional reserves is a risk-averse way for managers to protect against this uncertain future liability and insulate themselves from future scrutiny (Stein, 1989). Furthermore, excess reserves ultimately not used for these risk averse purposes can provide managers with slack to pursue their own choice projects (Jensen, 1986; O'Brien, 2003),

motivated by their interests in building a legacy (Matta & Beamish, 2008) or an empire (Baldenius et al., 2014).

Specific to risk, reserve levels represent a discrete measure of risk in managerial behavior. Firm risk in the context of managerial agency arguments has been measured in a variety of ways including proxies derived from stock returns, financial ratios and income stream uncertainty (for review see Miller & Bromiley, 1990). Specifically, common measures of risk include book-to-equity (e.g. Deutsch, Keil, & Laamanen, 2011), beta (for review see Ruefli, Collins, & Lacugna, 1999), expenditures on R&D, capital and long-term debt (Devers et al., 2008). These are composite measures that indicate top managers' overall risk tolerance, but they say nothing about the level of risk in specific decisions that managers make. Managers have the ability to configure their decisions, perhaps choosing to exercise risk along visible measures of risk and maintain risk aversion along less well-understood activities. This suggests that managers may demonstrate risk along visible measures, but exercise risk aversion in less visible measures, again, calling for a discrete measure of self-interested risk and indicating that visible measures could be insufficient in capturing managerial self-interested behavior.

Using a measure of reserves, I limit my sample to the insurance industry because it is a non-emergent industry and it isolates a discrete measure of managerial self-interested behavior.

5.1.2 Time period setting. I position the study from 2001 to 2012 after significant discontinuous change in the regulatory environment. Regulation Fair Disclosure (RegFD), which fundamentally changed the rules related to private disclosure, came into full practice in 2001. RegFD requires all publicly traded companies to make all disclosures public. This regulation eliminated the practice of selective disclosure where firms provided certain investors and

analysts with private firm-specific information. The implementation of RegFD increased information asymmetry between the managers and analysts (Straser, 2002), significantly limiting private disclosures and hindering analysts' individual and consensus accuracy (Agrawal et al., 2006). The increased relevance of public disclosures to analysts (Charoenrook & Lewis, 2009; Irani, 2004) after RegFD and the decreased impact that private disclosure channels had on analyst forecasts immediately following RegFD (Cohen et al., 2010) indicate that RegFD created significant discontinuous change in the practice of private disclosure. Thus, a study crossing this regulatory overhaul would likely obscure effects related to analyst's access to private information.

While RegFD has limited overt selective disclosure of private information, it has not shut down private information channels altogether. Indeed, those analysts who have risen to the top of their field post-RegFD "rely on industry contacts and good channel checks… Analysts can spend upward of 100 days on the road each year, attending industry conferences, meeting investors and visiting their companies' plants, outlets and headquarters. The trends they spot, the problems they see, the vibes they get when talking with management are often the difference [in their performance]" (Hershberg, 2012). Thus, RegFD has not stopped analysts from seeking private information but it has made the exchange more passive. Managers no longer can selectively share private information but they can provide analysts access to management and internal operations through in-person meetings. These meetings likely took place before RegFD but were not disclosed; after RegFD these meeting are disclosed and now measurable. Thus, focusing on the time period after 2001 keeps the type of private "disclosure" consistent and observable.

5.2 Data

I created an unbalanced panel data set using public companies identified in COMPUSTAT in the insurance industry (SIC 63) from 2001-2012. I removed insurers with more than 80% of their reserves dedicated to reinsurance because this is an indicator that their core business is dedicated to reinsurance. Reinsurers are guided by special accounting rules because their exposure or risk can vary significantly based on the type of reinsurance contract (Nissim, 2010). Since I cannot isolate the different contracts and accounting practices to parse their effects, I have chosen to remove these reinsurers from the sample.

Furthermore, I dropped 4 outlying observations assessing their Cook's Distance at the critical value of the F distribution $F(35, 799)=0.98$ at $\alpha=.50$ (Cohen, Cohen, West, & Aiken, 2003). Finally, removing observations with missing variables, my final sample includes 828 firm-year observations across 107 unique firms. Variable descriptive statistics and correlations are in Table 1.

5.3 Measurement

5.3.1 Managerial self-interested behavior. Sourced from COMPUSTAT, I collected data on reserves, reported on insurers' balance sheets as a liability. While past authors have scaled reserves by total assets in a year *t* (e.g., Beaver et al., 2003), I scale this figure by total premiums. I make this choice to remove the effects of non-insurance business within these insurers, particularly for health insurers. Since health insurers have a mix of risk (membership where the insurance company takes the risk and collects premiums) and non-risk (membership where the customer takes the risk and the insurance company collects fees for providing the administration) business, total assets are not reflective of the actual size of the insured risk. Thus, I scale the

reserves by premiums to get reserve per dollar of premium. Finally, I take the natural log of this number because a skewness-kurtosis normality test indicated kurtosis ($p < .01$) and skewness ($p < .01$), which significantly rejected the null hypothesis that reserves per dollar of premium is normally distributed. Formally, I calculated this measure as:

$$SIB_t = \log (RESERVES_t / PREMIUMS_t)$$

5.3.2 Accessibility variables. To proxy for how accessible managers are to analysts, I develop an intensity measure using meetings that managers can choose to hold with investment banks and brokerages. These meetings provide analysts with internal access to operations and the opportunity to informally interact with management. This access gives analysts the opportunity to informally gather private information through observation, management tone, etc. RegFD requires disclosure of these meetings through a Section7 8k filing. Drawing from filings in ThompsonOne, I collected all 8k section 7 filings for the insurance industry within the study time period. To capture accessibility as an intensity measure, I scale the number of filings by the number of analysts covering the firm. Specifically, I divide the total number of filings in one year by the number of first reported analyst estimates for that year, using the count of estimates as a proxy for analyst coverage. Formally this is calculated as:

$$ACCESS_t = FILINGS_t / ESTIMATES_t$$

For use when interacting with a quadratic term on analyst forecast optimism I mean centered $ACCESS_t$ by fiscal year to capture whether managers were more or less accessible in a fiscal year compared to the rest of the insurance industry ($ACCESSc_t$). Then I created a dummy variable ($ACCESScd_t$) for use in the models with quadratic interactions. Scores on $ACCESSc_t$ greater than 0 were coded as a "1" and represent above mean access.

5.3.3 Analyst forecast optimism. I develop a measure for analyst forecast optimism that is a modified version of analyst forecast bias, more commonly drawn on in the finance and accounting literature. Prior authors have calculated forecast optimism or pessimism as the bias - difference between first reported forecast on year or quarter end EPS and year or quarter end actual EPS and in the same year (Espahbodi, Dugar, & Tehranian, 2001; Liu, Sherman, & Zhang, 2014). The bias, if positive, assumes the difference represents optimism rather than error. Scholars using this distal measure of forecast bias end up controlling for several extraordinary items to isolate the bias. Controlling for the volatility of returns over the course of the measurement year attempts to control for error found in measures of bias because the earnings on more volatile firms are harder to forecast accurately (Lim, 2001). Further, using consensus forecasts, specifically the median forecast across all covering analysts, serves as a natural control on inaccuracy related to lack of ability.

Despite the ability for this common measure of forecast bias to isolate forecast optimism, reserves, the dependent variable, can be used to manipulate earnings throughout the year (Beaver et al., 2003). Scholars using the distal measure of forecast bias often control for the confounding risk of managerial earnings manipulation that can happen between the initial forecast and the reporting of year end results (Lim, 2001). However, this is precisely the variable of interest in this study. To further explain, I consider the effects of this distal forecast measure with respect to my study. Consider when analysts' first forecasts come in close to year-end actual results, analyst bias is close to zero. Analysts could have accurately predicted a relatively stale year and that is what happened – they were neither overly optimistic nor pessimistic. In this case forecast bias accurately captures their outlook at the start of the year. However, this neutral bias could also have resulted because managers decided to draw down reserves to boost up earnings to meet

overly optimistic analyst forecasts. In this case I would not capture this optimistic outlook using the distal measure of bias.

Thus, to reduce the confounded relationship between reserves and optimism throughout a forecast period, I use a modified calculation of forecast bias. Similar to more recent work (Kato, Skinner, & Kunimura, 2009), I capture the degree of analyst forecast bias as the difference between median analysts' forecasts on EPS at the start of year *t* and the actual year-end EPS at year *t-1*. This measure also makes strides at reducing the presence of forecast error in the calculation of forecast optimism. First, I use the median forecast across all covering analysts, naturally reducing error. Second, there is not a significant intervening time period to create the opportunity for volatility error between the prior year-end result and the first reported forecast for the following year.

I label this more proximal measure of forecast bias, *forecast optimism* to more closely reflect my theory. Since I argue that self-interested behavior changes at high levels of forecast optimism (when bias is positive), it is the optimistic end of forecast bias that is of primary interest in this study. Furthermore, there is evidence that analysts tend to be more optimistic than pessimistic (De Bondt & Thaler, 1990). My data reflects this optimistic tendency as well with a 0.01 mean score on optimism, a maximum of 1.80 and a minimum of -0.30.

Finally, consistent with measures of forecasts on EPS I scale the difference between analysts' median year end forecast and the prior year's actual year-end result by stock price to allow for comparability (Amir & Ganzach, 1998; Lim, 2001). Using this measure I am capturing analysts' outlook for the upcoming year - whether or not they think a firm will perform better this year over last year. Specifically, I calculate analysts' optimism as:

$$OPTIMISM_t = FEPS_{first,t} - AEPS_{final,t-1,} / SP_{final,t-1}$$

Where $AEPS_{final,t-1}$ is the actual EPS at the firm's annual fiscal close in fiscal year *t-1*, and $FEPS_{first,t}$ is the first reported median annual EPS forecast for the fiscal year *t*. The difference between $FEPS_{first,t}$ and $AEPS_{final,t-1}$ is expressed as a percentage of the stock price at the end of year *t-1* ($SP_{final,\ t-1}$). $OPTIMISM_t$ indicates the optimism in analysts' initial median forecast in year *t*. Negative numbers indicate pessimism and scores close to zero reflect impartiality.

5.3.4 Firm performance. I will measure firm performance with return on equity (ROE_t) sourced from COMPUSTAT. In theorizing the effects of firm performance, I argued that managers and analysts are more likely to pursue their own self-interests when investor-owner interests are being adequately met. ROE is a measure of the return on investor equity, therefore it is a good proxy for investor firm performance goals. In this sample mean ROE is 9%.

5.3.5 Control Variables. I plan to control for the expected duration of the exchange between analysts and managers because longer-horizon exchanges create more motivation for reciprocity to facilitate the exchange (Das & Teng, 2002). To proxy this expected exchange horizon, I will use the ***CEO's age***, as younger CEO's have a longer career horizon (Matta & Beamish, 2008) and subsequently a longer expected horizon to engage in social exchange with analysts. Thus, I expect CEO age (AGE_t) to be negatively related future management accessibility. In addition, older CEOs are more likely to have higher quality financial reporting (Huang, Rose-Green, & Lee, 2012), suggesting that older CEOs are less likely to manipulate reserves to their benefit. Thus I expect CEO age to be negatively related to managerial self-interested behavior. I sourced CEO age from Compustat's Execucomp database and filled in missing values through manual look-ups on ThompsonOne. The average age of CEOs in my dataset is 56.

In the model of managerial self-interested behavior, I also control for the firms' end of year ***cash*** position at *t-1*. Excess cash in the prior year provides more opportunity to increase subsequent year reserves, suggesting that cash and reserves are likely to be positively related. I divide the firm's cash by total assets at *t-l* to scale for firm size ($CASH_{t-1}$). In addition, while I use median analysts' forecasts to calculate analysts' forecast optimism, I recognize consensus around that median forecast will vary. I control for the ***standard deviation of first reported analyst forecasts*** ($FORSD_t$) in both models to isolate the effect of optimism in analysts' forecasts on both manager's self-interested behavior and their accessibility.

To control for year effects, I include ***year dummy variables*** for the years represented in the sample. This sample crosses over years that likely have significant impact on managerial decision making, such as the Great Recession. Furthermore, when RegFD initially passed there is evidence that in the years immediately following the passage, analysts and managers had less interaction (Cohen et al., 2010), but I expect they adapted over time. Dummy variables on year should control for this effect in the early years following RegFD and the years during the Great Recession.

Finally, in the managerial accessibility model, I also control for sector effects. In this model I do not use a fixed effects specification and the number of firms makes controlling for firm effects inefficient. The various sectors of the insurance industry tend to have slightly different approaches to reserve decisions because of the nature of the insured risk (Nissim, 2010). Thus, I created a ***sector dummies*** for the various sectors of the insurance industry to control for these effects on managerial accessibility.

5.4 Model Specification

5.4.1 Managerial self-interested behavior model. To test the hypotheses where managerial self-interested behavior is the dependent variable I use a two-way firm-year fixed effects panel regression model. Using this approach, I can model within firm changes, controlling for differences between firms (such as actuarial and underwriting aptitude). A Hausman test rejects the null hypothesis that fixed effect and random effect coefficients are the same ($\chi^2 = 79.13$, $p<.01$), providing support for the fixed-effect specification. The full model specification is expressed as:

$$SIB_{it} = \beta OPTIMISM_{it} + \beta OPTIMISM2_{it} + \beta ROE_{it} + \beta FORSD_{it} + \beta AGE_{it} + \beta CASH_{it-1}$$
$$\beta ACCESScd_{it} + \beta OPTIMISM_{it}*ACCESScd_{it} + \beta OPTIMISM2_{it}*ACCESScd_{it} +$$
$$\beta OPTIMISM_{it}*ROE_{it} + \beta OPTIMISM2_{it}*ROE_{it} + YEARd_{it} + \varepsilon_i$$

Where:

SIB_{it} = Managerial self-interested behavior for the i^{th} firm in year t

$OPTIMISM_{it}$ = First reported analyst forecast optimism for the i^{th} firm in year t

$OPTIMISM2_{it}$ = The square of first reported analyst forecast optimism for the i^{th} firm in year t

ROE_{it} = Return on equity for the i^{th} firm in year t

$REGFD_{it}$ = Time elapsed since RegFD for the i^{th} firm in year t

$FORSD_{it}$ = Standard deviation of first reported forecasts for the i^{th} firm in year t

AGE_{it} = CEO age for the i^{th} firm in year t

$CASH_{it-1}$ = Cash for the i^{th} firm in year t-*1*

$ACCESScd_{it}$ = Indicator for accessibility at or above the fiscal year mean for the i^{th} firm in year t

$YEARd_{it}$ = Vector of dummy variables on year for the i^{th} firm in year t

5.4.2 Managerial accessibility model. To test the hypotheses where accessibility is the dependent variable, I use a random effects Tobit panel regression model. With 222 out of 705 observations on accessibility, equal to zero, the dependent variable has a corner solution outcome and can be estimated using a tobit regression model (Woolridge, 2002). The full model is expressed as:

$$ACCESS^{*}_{i,t+1} = \beta OPTIMISM_{it} + \beta OPTIMISM2_{it} + \beta SIB_{it} + \beta ROE_{it} + \beta FORSD_{it} + \beta AGE_{it} + \beta ACCESS_{i,t} + SECTORd_{it} + YEARd_{it} + u_i$$

$$ACCESS_{i,t-1} = 0 \quad \text{if } ACCESS^{*}_{i,t+1} \leq 0$$
$$= ACCESS^{*}_{i,t+1} \quad \text{if } ACCESS^{*}_{i,t+1} > 0$$

Where:

$ACCESS_{i,t+1}$ = Accessibility for the i^{th} firm in year $t+1$

$ACCESS_{i,t}$ = Accessibility for the i^{th} firm in year t

$OPTIMISM_{it}$ = First reported analyst forecast optimism for the i^{th} firm in year t

$OPTIMISM2_{it}$ = The square of first reported analyst forecast optimism for the i^{th} firm in year t

SIB_{it} = Managerial self-interested behavior for the i^{th} firm in year t

ROE_{it} = Return on equity for the i^{th} firm in year t

$FORSD_{it}$ = Standard deviation of first reported forecasts for the i^{th} firm in year t

AGE_{it} = CEO age for the i^{th} firm in year t

$SECTORd_{it}$ = Vector of industry sector dummy variables for the i^{th} firm in year t

$YEARd_{it}$ = Vector of dummy variables on year for the i^{th} firm in year t

CHAPTER 6: RESULTS

6.1 Results for Fixed Effects Regression on Managerial Self-interested Behavior

Table 2a presents results for a series of fixed effects regression models on managerial self-interested behavior (Models 1-5). In addition to coefficient estimates on the predictor variables, I also report model statistics. Specifically, I report the F-statistic to test if the coefficients in the model are different than zero. I also report all R^2 estimates, but will focus my attention only R^2_{within} because that is the most useful model estimate in a fixed effect model as it describes the amount of within firm variance explained by the model (Ashley, 2012). Finally, all model iterations report the intraclass correlation (rho) is 0.97. This suggests that 97% of the variance is due to firm-level differences in reserve behavior, supporting the fixed effect specification, and lending addition importance to R^2_{within} estimates.

Model 1 is the base model with only control variables. The F-statistic suggests acceptable model fit (F=2.18, p<.05) and the model explains 8.1% of within firm variance (R^2_{within} = 0.0812). Model 2 adds analyst forecast optimism weakening model fit (F=1.85, p<.05), but helping explain more within firm variance (R^2_{within} = 0.0915). Model 3 adds the direct effect of the variables that are hypothesized to interact with optimism, namely accessibility and ROE (F=2.09, p<.05) and Model 4 is the full linear model including the linear optimism interactions with accessibility and ROE respectively. Fit improves in Model 4 (F=2.08, p<.05) over Model 2 and explains 6% more within firm variance (R^2_{within} = 0.1532).

In Model 5 the squared-term on optimism is added, as are the accessibility and ROE interactions with this squared term to complete the full non-linear model. Model fit improves dramatically (F=11.83, p<.01) over all prior models with this full model explaining 22.19% of

the within firm variance on managerial self-interested behavior. As expected the linear (β= 1.91, p<.05) and squared (β= -1.06, p<.05) terms on analyst forecast optimism are statistically significant and in the hypothesized direction. Since the squared term on forecast optimism can be interpreted as an interaction of optimism with itself, I graph both the linear effect of optimism from Model 4 and the quadratic effect of optimism in model 5 to show the true effect (Cohen et al., 2003). Figure 4 indicates a non-linear effect of forecast optimism on managerial self-interested behavior. As forecasts get more optimistic, managers hold onto more reserves, but this positive effect dampens when analysts are overly optimistic and managers are forced to manage toward higher targets. This result is consistent with hypothesis 1.

I also use Model 5 to test hypothesis 2. First, the direct effect of ROE on self-interested behavior is negative and modestly significant (β = -0.31, p<.10), suggesting that irrespective of analysts, the better firms perform, the less managers will act self-interestedly with respect to reserves. This could suggest that managers only act self-interestedly when pressured by poor performance that threatens their employment stability and wealth. It is also possible that when performance is strong, managers no longer are faced with a need to stockpile reserves to protect against future losses because they already have additional slack to protect against these losses. Furthermore, when performance is strong, managers are more likely to be risk neutral (Bromiley, 2010).

Examining the coefficients on the interaction between forecast optimism and ROE, the ROE interaction with the linear term on optimism is statistically significant (β = 2.50, p<.01), suggesting strong support for hypothesis 2. This indicates that the effect of analyst optimism on managerial self-interested behavior is weaker for low performing firms and stronger for high performing firms, as hypothesized. Figure 5 illustrates this relationship contrasting lower

performing (1 standard deviation below mean ROE) and higher performing (1 standard deviation above the mean) firms. Among lower-performing firms, increasing forecast optimism has less of an effect on the amount of reserves managers hold because scrutinizing investors are constraining managers' ability to over or under-reserve. On the other hand, higher-performing firms are not constrained by investor scrutiny and, as a result, are much more likely to manipulate reserves as analysts' get more optimistic.

While I did not hypothesize a change in the shape of quadratic term on optimism and ROE, I do note that this interaction was also significant ($\beta = -1.76$, $p<.05$). Figure 5 shows that low-performing firms have a more linear shape, not constraining their reserve behavior when analysts are overly optimistic. This different shape is likely related to the prior explanation on the linear interaction. As low-performing firms are under more investor scrutiny they not only constrain their manipulation of reserves, but they also are much more consistent in their reserve behavior regardless of optimism in analyst forecasts.

Finally, I test hypotheses related to the application of the assurance game to the relationship between managers and analysts. First, in Figure 6, I evaluate my data in a simplistic payoff matrix where I use the dummy variable I created to represent above and below mean accessibility and I dichotomize forecast optimism between optimistic (scores > 0) and pessimistic (scores< 0) forecasts. This allows me to examine both the distribution of my observations in the assurance payoff matrix and the mean value of managerial self-interested behavior (managers' payoff) in each quadrant. As discussed, assurance games have two equilibria, mutual coordination and mutual defection, thus I should see most observations concentrated in these quadrants as behavior polarizes in assurance games (Schelling, 2011). While over 51% of the observations are in these two quadrants, the single quadrant that holds the

majority of observations have managers and analysts both choosing to defect (40% of all observations). When managers and analysts do choose to mutually coordinate mean self-interested behavior is 1.22, the highest across the payoff matrix. These descriptive statistics suggest that the assurance game is a valid theoretical framing because mutual coordination does yield the highest payoff. However, it seems managers and analysts struggle to develop assurances to reach that equilibrium state.

Next, I use Model 5 to test hypothesis 5 where I predicted that accessibility should strengthen the relationship between optimism and self-interested behavior (hypothesis 5a) and make the relationship more linear (hypothesis 5b). The interaction of the linear term on optimism and accessibility is significant but in the opposite direction than hypothesized (β = -1.68, p<.05), rejecting support for hypothesis 5a. The interaction of accessibility and the quadratic term on optimism was also significant (β = 1.02, p<.05). Because this is an interaction with a non-linear term, I graph these results to assist in hypothesis testing. Figure 7a shows the effect of different levels of analyst forecast optimism on predicted managerial self-interested behavior when accessibility is above the mean and below the mean. When managers are accessible the shape of the curve is more linear than when managers are inaccessible, providing support for hypothesis 5b. However, this graph clearly illustrates that contrary to hypothesis 5a, the relationship between forecast optimism and self-interested behavior is much weaker when managers are accessible.

Figure 7b overlays the theoretical inequalities ($M_{AO} > M_{IO} > M_{IP} > M_{AP}$) driven by assurance game-theoretic reasoning (for reference refer back to Section 4.3.3) on the graph of predicted managerial self-interested behavior. It is clear that these inequalities are not consistent with the model results. The model suggests the following inequalities: $M_{IO} > M_{AO} > M_{AP} > M_{IP}$.

Managers maximize their self-interested behavior when they are inaccessible to analysts and analysts are optimistic (M_{IO}) with mutual cooperation (M_{AO}) falling to the second highest outcome. This result is more consistent with the payoff structure of a Prisoner's dilemma game than an assurance game (Kollock, 1998), suggesting that managers and analysts may not have a motivation to prefer coordination. Phenomenological evidence of contention between managers and analysts fit these findings (e.g. Turner, 2005).

Considering both the results for firm performance and accessibility, in section 6.4.2 I conduct a post-hoc analysis that explores a more contingent model of managerial self-interested behavior. I argue there is evidence that it is only among low-performing firms with concerned investors that accessibility becomes particularly important to analysts who need internal information to develop their closely-watched forecasts and optimism becomes particularly important to managers who need to reassure investors when times are tough. This interdependence in tough times propels them to see value in coordination that results in assurance game-theoretic payoffs.

6.2 Results for Censored Random Effects Regression on Managerial Accessibility

Table 2b presents the results for the censored (tobit) random effects regression on accessibility (Models 6-10). I will draw from these results to see if there is evidence to support hypotheses 3 and 4. Similar to the model-building approach used in the prior set of models, I start again with a base model (Model 6) that includes just control variables. Model fit is strong (X^2 = 281.18, p<.05) and improves only modestly when I add forecast optimism into the equation in Model 7 (X^2 = 283.51, p<.05). In model 8 I add the squared term on optimism, which does not improve model fit (X^2 = 283.50, p<.05). I use this model to test hypothesis 3. I argued that

managers are more likely to bond with analysts by offering access when analysts issue optimistic forecasts and this relationship will dampen at high levels of analyst optimism. However, neither optimism ($\beta = -0.32$, $p>.10$) nor the squared term on optimism ($\beta = 0.02$, $p>.10$) is statistically significant, thereby rejecting support for hypothesis 3.

Using the guidelines provided in Mathieu and Taylor (2006) to test for full mediation hypothesized in hypothesis 4, the path between forecast optimism and accessibility must be significant as a precondition. Given that I have already not found evidence of this relationship, I can reject support for hypothesis 4. However, even absent this relationship an indirect relationship is still possible because, as discussed earlier, optimism and its quadratic term do carry statistically significant relationships with self-interested behavior (from Model 5: $\beta = 1.91$, $p<.05$ and $\beta = -1.06$, $p<.05$ respectively). Thus I turn to Model 9 to test the relationship between self-interested behavior and accessibility. Adding self-interested behavior to base model degrades model fit modestly ($X^2 = 280.68$, $p<.05$) and self-interested behavior does not have a strong relationship with access ($\beta = 0.03$, $p>.10$). Model 10 considers the simultaneous effect of optimism and self-interested behavior on accessibility. Model fit improves over Model 9 ($X^2 = 283.49$, $p<.01$). Again self-interested behavior does not demonstrate a statistically significant relationship with accessibility ($\beta = 0.04$, $p>.10$). This suggests there is neither evidence of full mediation, nor evidence of an indirect effect. Put differently there is no evidence that managers are considering how analysts impact their ability to behave self-interestedly when managers are making decisions on their accessibility. This calls into question the interdependence assumption between managers and analysts that is crucial to fueling an exchange relationship between the two.

It is important to note that in order to meet the causal order preconditions of mediation I rely on temporal precedence (Mathieu, J.E. & Taylor, S.R., 2007, 2006) with optimism measured as the first reported forecast in the year, reserves as the year-end reserves and accessibility in the following year. Thus, there can be nearly two years between the measurement of optimism and accessibility in this model. Ensuring this rigorous temporal precedence in addition to data limitations could be impacting the results for hypotheses 3 and 4. I discuss these limitations in more detail in Section 7.3.1. Furthermore, in Section 6.4.1 I conduct a post-hoc analysis that relaxes the temporal precedence of these key variables.

6.3 Robustness Analyses

6.3.1 Expanded sample. While the focus of this study is on the period after the implementation of Regulation Fair Disclosure in 2001, I also collected data back to 1991 to test the consistency of the basic relationship between analyst forecast and managerial self-interested behavior. Descriptive statistics and correlations for this larger sample can be found in Table 3a. I re-ran the linear and quadratic fixed effect regression models for forecast optimism on managerial self-interested behavior. Instead of year dummies, I used a single dummy for post-RegFD observations (occurring in the time period after 2001). The results can be found in Table 3b. The dummy variable on post-RegFD indicates that there are no statistically significant differences in managerial self-interested behavior before and after RegFD ($\beta = 0.05$, $p>.10$). It is important to note that I could not test for any relationships that involved accessibility prior to RegFD because accessibility was unobservable, which is the rationale for placing my study in the post-RegFD environment.

In this robustness check, analyst forecast optimism exhibits the same curvilinear relationship with managerial self-interested behavior across the full sample (1991 – 2012). Optimism is positive and significant ($\beta = 1.42$, $p<.05$) and optimism-squared is negative and significant ($\beta = -0.86$, $p<.05$). Similar to my analysis earlier, I graphed the predicted managerial self-interested behavior across different levels of optimism in both the linear and quadratic models. Figure 8a demonstrates a similar non-linear relationship between optimism and managerial self-interested behavior as found in the post-RegFD sample.

Furthermore, I was able to test the interaction between forecast optimism and ROE. The positive and significant coefficient on the interaction between ROE and the linear term on optimism ($\beta = 2.92$, $p<.01$) provides additional support for the hypothesis that firm performance strengthens the relationship between analyst forecast optimism and self-interested behavior. Figure 8b depicts this relationship. These results also support a significant interaction between ROE and the squared term on forecast optimism ($\beta = -2.46$, $p<.01$). The graph shows that the relationship between optimism and self-interested behavior is also more linear when firms are performing poorly. As expected, these results are similar to results found in the post-RegFD sample.

6.3.2 Negative binomial regression on managerial accessibility. I argue that accessibility is an intensity construct, such that managerial accessibility provides analysts a deep level of information about management and operations. I represent the intensity of accessibility by dividing the number of reported management interactions with analysts by the number of analysts covering the firm to get a continuous measure. However, at its core, the number of interactions is a non-negative count variable, suggesting a count model (Rock, Sedo, &

Willenborg, 2001). In this data set the minimum count of RegFD filings is 0 and the maximum is 28. Rather than predicting the intensity of managerial accessibility, creating a model using count data would predict the probability of another manager-analyst interaction.

A negative binomial model is indicated if there is a contagion effect such that the probability of more interactions changes once there is one interaction (Long, 1997). To account for this possibility and test the robustness of the tobit results, I run a fixed effects negative binomial model on the original count data of the number of RegFD filings, using the number of analysts to impose a conditional exposure in the model. The results of this test are in Table 4 and are similar to those from the tobit model. No statistically significant relationships are revealed.

6.4 Post-Hoc Analyses

6.4.1 Model with more proximal outcome on accessibility. I conducted a post-hoc analysis that uses the more proximal current year accessibility in testing a relationship between analyst optimism and managerial accessibility. As argued earlier the significant time lag between forecast optimism at the start of year *t* and accessibility at the end of year *t+1* could be contributing to the non-significant relationship between the two. I create this time lag to maintain temporal precedence in testing the hypothesized mediation of self-interested behavior. However, for this post-hoc analysis I simply test the direct effect of analyst forecast optimism at the start of year *t* on accessibility by the end of year *t*, leaving out self-interested behavior because I am not able to include a measure of self-interested behavior that maintains temporal precedence in this shortened time period. Table 5 shows the result of this modified analysis. Optimism has a negative linear relationship with accessibility ($\beta = -2.39$, $p<.01$), and a positive quadratic relationship ($\beta = 2.16$, $p<.01$). Figure 9 graphs the relationship between forecast

optimism and self-interested behavior from the linear model (Model 2) and the final quadratic model to illustrate the curvilinear relationship suggested in the results. Interestingly, accessibility decreases as forecast optimism increases. This suggests managers are more open to meeting with analysts when analysts are pessimistic. The significant negative relationship between ROE and accessibility ($\beta = -0.32$, $p<.05$) also suggests that managers feel they need analysts the most times are tough, leading me to conduct another post-hoc analysis that may shed more light the interaction between managers and analysts.

6.4.2 Three-way interaction between optimism, accessibility and firm performance. I argue that when investor attention is drawn to managerial behavior – by low performance and pessimistic analyst forecasts – managers curb their self-interested behavior. Consistent with my arguments, my results show that performance strengthens the relationship between forecast optimism and managerial self-interested behavior. However, I also argue that accessibility should strengthen the relationship between forecast optimism and self-interested behavior because it is fostering a cooperative relationship between managers and analysts. Inconsistent with these arguments, but demonstrating strong statistical significance, I find that accessibility actually weakens the relationship between analyst forecast optimism and self-interested behavior. Furthermore, results of the prior post-hoc analysis suggest managers only grant access when they are under pressure, e.g., when analysts are being pessimistic or firm performance is weak. Together these results suggest a more complex relationship between analysts, managers and firm performance.

When performance is high analysts will have very little cooperative bargaining power. Evidence from the analyst literature suggests that analysts tend to drop coverage on weakly

performing firms (McNichols & O'Brien, 1997), looking to attract new customers and retain current customers by covering strong performing stocks (Irvine, 2004). This suggests analysts have little leverage over high performing managers. Thus, managers of high-performing firms dominate the relationship with analysts, limiting access to minimize any transparency and maximize their self-interested behavior, knowing that analysts will continue their coverage, even confident that the analyst coverage will remain optimistic to pad analyst portfolios. When performance is strong managers can realize their highest payoffs by not coordinating with analysts (limiting access) even when analysts are trying to coordinate with them (issuing optimistic forecasts).

The tendency of analysts to drop coverage on lower performing firms also suggests that when firms are performing poorly, analysts hold more equivalent power with respect to managers because analysts can threaten to drop coverage. Furthermore, when firms are underperforming investors rely more heavily on analyst forecasts to inform their investment strategy and place more pressure on managers to improve performance. Under these conditions accessibility is particularly important to analysts to gather information and optimism is particularly important to managers to placate investors. Thus, the interdependence of managers and analysts is strongest when performance is low, and the value of their payoffs is highest when they coordinate.

These observations suggest that (1) among high performing firms self-interested behavior is maximized when analysts are increasingly optimistic and accessibility is low (prisoner's dilemma game), but (2) among low performing firms self-interested behavior is maximized when analysts are optimistic and accessibility is high (assurance game). I develop a dummy variable for above mean ROE (Mean = .57, Standard Deviation = 0.50) to simplistically sort observations

into payoff matrices under conditions of high and low performance. In figure 10a, when firm performance is high, managers maximize their payoff by restricting accessibility when analysts are optimistic, consistent with the prisoner's dilemma (Q3 mean = 0.73). Managers don't need to coordinate with analysts to maximize their payoffs when performance is high. However, figure 10a reveals that when performance is low, managers maximize their self-interested behavior when managers and analysts are coordinating, consistent with assurance game theoretic reasoning (Q1 mean = 1.79). Managers and analysts are more likely to need each other in the face of unhappy investors. In fact, it is in this state that managers are most risk averse.

This complex relationship between firm performance, analysts forecast optimism and accessibility also suggests the presence of a three-way interaction. Table 6 shows the results for this new model. I use a continuous measure of forecast optimism and dichotomous measures of ROE and accessibility to facilitate interpretation of this three-way interaction. I find there is a significant three way interaction ($\beta = -4.15$, $p<.05$). Figure 11 provides clear evidence for the assertion that managers in strong performing firms maximize their self-interested behavior when analyst forecasts are optimistic (validating managerial behavior) and managers, with the relative market power they hold when their firm is performing well, limit accessibility to reduce scrutiny on their self-interested actions. The results for managers in low performing firms are less clear in this graph, suggesting it is the combination of high performance, low accessibility and analyst optimism that is driving the significant three-way interaction. One interpretation is that managers and analysts operate according to assurance game – they engage in an exchange relationship where forecast optimism and access are interdependent because they are meaningful to the other party – except when a firm is performing really well. In this case managers will act

self-interestedly by defecting because analysts are less relevant to individual outcomes under these circumstances.

Game theory holds that these asymmetrical relationships (when one player defects and the other coordinates) are not sustainable over any length of time. Specifically, it is likely that even optimistic analysts should start to publicly challenge managers of high performing firms that are inaccessible in order to get managers to start opening up internal access. What this graph does not show and what this study does not address is the stability of these symmetrical or asymmetrical relationships. This analysis requires more frequent observations along these measures and is an important direction for future research that I address later.

CHAPTER 7: DISCUSSION AND CONCLUSION

7.1 Summary of Key Findings

Past research has largely held analysts as powerful institutions monitoring managerial behavior with managers particularly vulnerable when analysts are pessimistic. I relax these assumptions, letting managers and analysts engage in an exchange relationship centered on their own self-interests. In particular, this research sheds additional light onto the relationship between managers and analysts with three key findings. First, while most prior management research has concentrated on the effects of pessimism among analysts on managerial behaviors, I find interesting non-linear effects at the optimistic end of forecasts. Specifically, while managers prefer optimistic forecasts, they have diminishing returns to managers. Given that analysts tend to be optimistic (De Bondt & Thaler, 1990), it is this end that likely has broader impact on management practice.

Second, consistent with prior literature, I find that analysts do serve as valid institutional monitors, directing the attention of investors. However, unlike past work I also find analyst self-interested behavior impacts their role as monitors, fostering a self-interested exchange relationship between managers and analysts. If analysts were consistently strict monitors, managers should not be holding onto higher levels of reserves as a function of analyst optimism, this should be an insignificant relationship. But I found a strong positive relationship between forecast optimism and reserve levels. Analysts are not reflecting this risk averse, potentially value destroying behavior in their forecasts. This can be explained by a self-interested exchange relationship between managers and analysts. Analysts are less likely to draw attention to managerial self-interested behavior, when managers are giving analysts something they want. In

particular, analysts want internal access to firm management and operations to demonstrate validity to their investor clients. Managerial self-interests do not experience diminishing returns to analyst optimism when managers are accessible because of the assurances that managers and analysts have developed in their exchange relationship.

I also expected managers to act increasingly self-interestedly, when accessible managers coordinate with optimistic analysts. However, this effect appears to be more limited to conditions of low performance, leading to the third major finding. Firm performance is a game changer in the exchange relationship between managers and analysts. When firms perform well, it is managers, not analysts, who hold the power in the relationship because investor scrutiny is less likely and analysts have self-serving incentives to cover strong performing stocks. Under these conditions when managers restrict their accessibility they can hold excessive reserves. However, when firms are performing poorly managers and analysts have incentive to coordinate, working together to overcome investor anxiety. In this context managers need analysts to condone their self-interested behavior so they are they are able to accumulate reserves to protect against adverse events that could threaten firm survival during periods of already poor performance. Meanwhile analysts need managers to turn performance around to become more appealing to investors. Being optimistic on a low performing stock is risky, but can payoff for analysts in terms of credibility if they are right. This is an interesting result because it is precisely in these bad times that investors are looking to analysts for guidance on whether or not to keep their investment. If analysts are condoning self-interested behavior among managers in these times, investors are not getting the information they desire from analysts.

7.2 Discussion of Empirical Results

While the current management literature assumes a relatively deferential role for managers as they interact with analysts, agency bonding and game-theoretic reasoning introduce bonding and reciprocity motivations for an exchange relationship between managers and analysts. First, when analysts serve as monitors over managerial self-interested behavior, I find support that analyst forecast optimism exhibits a positive relationship with managerial self-interested behavior as more pessimistic forecasts draw investor attention and limit managerial self-interested behavior. Furthermore, this positive relationship tapers off at high levels of forecast optimism because these overly optimistic forecasts set challenging performance goals for managers, forcing them to temper their self-interested behavior.

Bonding arguments in agency theory suggest that agent managers are likely to bond with monitoring analysts in ways that analysts value, particularly when analysts are issuing forecasts that managers view favorably. Analysts place significant value on internal access to managers and firm operations (Hershberg, 2012). In this study I do not find support for a direct relationship between analysts forecast optimism and managerial accessibility as I expected. However, when I shortened the temporal distance between the time analysts issued their forecasts and when internal meetings were held in a post hoc analysis, I found support for a direct positive relationship between analyst forecast optimism and managerial accessibility. This result provides support for my bonding hypothesis, but also suggests that managers have a short memory with respect to analysts. Any benefits analysts may hope to gain from being optimistic are fleeting.

Addressing a call for a better understanding of the actual self-interested behaviors and events that result from opportunistic behavior interdependencies among stakeholder groups (von

Werder, 2011), I draw on game-theoretic reasoning to inform agency bonding arguments in the context of managers and analysts. Using game-theoretic reasoning, I argued that managers only reciprocate for analyst optimism with accessibility when managers realize a benefit to their self-interested behavior. I was not able to find support for the role of self-interested behavior mediating the relationship between forecast optimism and accessibility. I identify three possible explanations. First, this could be a result of the strict temporal precedence I imposed to ensure methodological accuracy, which I could not resolve even in post-hoc analyses, as I could not find an interim measure of self-interested behavior. Second, this result could suggest that players are being cooperative to start, but making changes in subsequent iterations after evaluating their actual payoffs. This is similar to an iterated Prisoner's dilemma game, specifically tit-for-tat, where players start by cooperating, will defect given cause, but don't hold a grudge, so they will quickly go back to cooperating (Axelrod, 2006 [1984]). In this type of game there is more cooperation for the sake of cooperation (i.e. optimism and accessibility will be related), but behavior is less related to actual payoffs as players are forgiving for payoff shortfalls (i.e. actual realized self-interested behavior does not play as much of a role in the choice to cooperate). Third, it also possible that managers are just not making attributions about changes to their self-interested behavior to analysts. Evaluating outcome interdependence is complex, the choice to reciprocate involves a laborious, decision process (Camerer, 1991). Boundedly rational individuals engaged in a complex decision process have limits in their cognitive ability (Simon, 1997 [1947]; Williamson, 1985) and they simply may not take the time to evaluate whether or not analyst optimism is impacting their behavior, but respond positively to the optimism by being more accessible.

Finally, I argued that managers and analysts are playing an assurance game, such that managers' highest payoff comes when they coordinate with analysts – providing internal access to analysts when analysts issue optimistic forecasts. However, despite descriptive statistics supporting this payoff intuition, I found that manager's achieve their highest payoffs when they restrict accessibility at times when analysts are optimistic. This type of payoff structure is more consistent with a Prisoner's dilemma game not an assurance game (Kollock, 1998). Trust is a key assumption in an assurance game (Kimbrough, 2005) and these finding suggest that managers and analysts do not exhibit a great deal of mutual trust. However, these results do provide support for theoretical interdependence between managers and analysts. Managers need analysts to be optimistic so managers can act self-interestedly.

7.3 Theoretical Extensions

Despite mixed results, this study extends current theory at the manager-analyst interface by shifting the role that analysts play in strategic management theory from a powerful institutional monitor to a similarly self-interested participant. Managers and analysts are actively engaged in a dynamic relationship centered on their different, but interdependent self-interests. Motivated by game-theoretic reasoning this study models variation in the interaction between managers and analysts and defines the relative order of payoffs managers and analysts experience across the different configurations of their interaction.

Though this dissertation is focused at the manager-analyst interface, this work makes several broader theoretical extensions. First, by using game-theoretic reasoning to constrain agency-bonding arguments, I demonstrate that interdependence among managers and analysts, both providing service to common investor owners, can exacerbate agency problems. Managers

have incentive to reduce accessibility in order to maximize their self-interested behavior, and analysts have restricted incentive to call managers out on this behavior as they have prefer to maintain optimism over the stocks they cover in their own self-interest. Thus, both managers and analysts pursue their self-interests at the expense of owner interests.

I also believe this work contributes to the discussion on inter-temporal tradeoffs as agents seek to insure large losses to their future self-interests by agreeing to smaller near term losses in those self-interests. Assurance game theoretic reasoning suggests that managers will be accessible, risking near term scrutiny for the chance that analysts will mutually cooperate with optimism, insuring future managerial self-interested behavior. Interdependence among parties can promote coordinated behavior toward long-run outcomes, but only when there is assurance that coordination is mutual. Results indicate these assurances are hard to achieve consistent with support for short-termism among managers in response to capital markets (Laverty, 1996). Instead of pursuing a path that could result in a longer-term self-interested payoff (the assurance game perspective), managers are more likely to defect to try to maximize their near term self-interested behavior (the prisoner's dilemma perspective). Differing incentives can change managers' payoff horizons (Souder & Shaver, 2010), suggesting these incentives may increase the likelihood of managers engaging in an assurance game. Just as these results demonstrate that contextual influence, namely firm performance, influences game choice, future research could examine individual-level antecedents to game choice.

In addition, these results refine broader theory that examines cooperative relationships. When times are tough, coordinated behavior among individuals or organizations, motivated by assurance game-theoretic arguments of repeated, interdependent strategic interactions, provides opportunity to maximize payoffs. In the domain of alliances this suggests alliances are more

likely to payoff when the partners are coming together in reaction to a challenging competitive environment, rather than a as a proactive, exploration alliance. Furthermore, assurance game-theoretic models have the opportunity to provide empirical motivation for organizational engagement in domains such as corporate social responsibility and environmental sustainability that have called for coordination among external stakeholders (Neubaum & Zahra, 2006) and through external industry groups, networks, or other group forums (Juravle & Lewis, 2009; Roome, 1994). These alliances are more likely to yield coordinated engagement when the motivation has a sense of urgency.

7.3 Empirical Extensions

I make several methodological contributions as I have developed unique measures to critical manager and analyst constructs. In a post-RegFD environment I introduce a new measure to capture private information sharing that is appropriately more passive than past selective disclosure practices. Even before RegFD finance and accounting scholars lamented the lack of measures available to capture managerial private information disclosures (Beattie, McInnes, & Fearnley, 2004; Core, 2001; Healy & Palepu, 2001), particularly now that Association of Investment Management and Research (AIMR) reports are no longer available. These reports collected data on the quality of public disclosures and non-public information exchanges between managers and analysts (Healy et al., 1999; Lang & Lundholm, 1993). In the absence of these reports and to improve upon the objectivity of measuring analyst acquisition and use of private information, accounting scholars have called for methods that incorporate content analysis (Beattie et al., 2004; Core, 2001). As a step forward in using content-based methodology in a post-RegFD environment I capture the internal access that managers allow

analysts providing analysts with the opportunity to gather private information. Specifically, I use content analysis of 8k filings to capture management meetings with the investment community that require disclosure under RegFD.

I selected the insurance industry to be able to isolate managerial self-interested behavior, in particular self-interested risk aversion. While the management literature often relies on measures of firm-level risk (for review of risk measures see Miller & Bromiley, 1990) or composites of risky behaviors (Devers et al., 2008), these measures do not isolate the risk in specific managerial discretionary decisions. Furthermore, I argued that managers are more likely to make self-interested decisions in industry-specific domains where investors and owners are less attentive, but analysts with industry expertise are attentive. While benefit and claim reserves are studied in the accounting literature as a specific accrual over which managers exercise discretion (Beaver et al., 2003; Gaver & Paterson, 2004; Petroni, 1992), I highlight the risk and slack properties of these discretionary claim reserving decisions to isolate a discrete self-interested managerial behavior.

Finally, I more completely capture the effect analyst forecast optimism, by incorporating the non-linear effect of this variable on managerial behavior. With optimistic analyst forecasts serving both as an indicator of confidence to investors (Amir & Ganzach, 1998) and a financial target for managers (Graham et al., 2005), I find a positive relationship between forecast optimism and managerial self-interested behavior that tapers off when forecasts get overly optimistic. This more nuanced way of capturing analyst optimism makes a contribution to finance, accounting and management models that examine analyst forecasts.

7.4 Limitations and Future Research Opportunities

7.4.1 Empirical limitations. While using reserves to proxy managerial self-interested behavior provides a strong discrete indicator, a derivative, reserve development, is more commonly found in the accounting literature (e.g. Beaver et al., 2003; Petroni, 1992). Reserve development more closely captures the discretion managers exercise in setting reserves by looking at how managers estimated the uncertain component of reserves. When prior period claims are finally settled managers make revisions, called prior period reserve development. If the reserves are unbiased then, on average, there would not be development. Development is positive when managers underfunded reserves in the prior period (reserves were understated) and negative when the reserves were overstated. This better captures exactly when managers manipulated reserves and by how much. That being said, I used a fixed effects specification so I am not comparing differences across firms where reserve development may be a more useful measure.

Another significant empirical limitation to this study rests in the measurement timing of several of my key variables. My theory explains a dynamic exchange relationship between managers and analysts, but my data does limit perceptibility of some of the exchange that likely goes on throughout the year. Management meetings are held throughout the year, analysts issue and revise forecasts throughout the year and reserves levels are topics of discussion at most quarterly analyst calls throughout the year. However, I can only measure reserves at the end of the year, limiting my ability to fully capture the exchange that goes on during the fiscal year. I think this limitation is particularly salient in testing hypotheses 3 and 4. To ensure temporal precedence in the meditational model, I used management meetings and analyst coverage in the following year to proxy for accessibility because I only had end-of-year reserves. Furthermore, forecast optimism was measured at the start of the year. Thus, when I tested hypothesis 3, I was

testing whether the optimism on first reported annual forecasts had an effect on the number of aggregate management meetings throughout the *following* year. I am not sure managers have memories long enough to attribute favorable forecasts to their accessibility decisions close to two years later. This also likely impacted the meditational effect of managerial self-interested behavior. More likely, when managers adjust reserves to the favorability of forecast revisions, they immediately attribute this benefit to analysts. Thus, the decision to increase accessibility is likely more proximal to the benefit in self-interested behavior. The post-hoc analysis attempts to shorten this time gap, and provides support for the supposition the temporal proximity is critical in detecting effects in the relationship between managers and analysts.

Finally, my theory and measurement are not completely aligned on the construct of managerial self-interested behavior in hypothesis 4. Game theory reasons that a player makes decisions on how to act based on their *expectations* of how the other player will act and how that will impact payoffs (Parkhe, 1993). I measure realized managerial self-interest rather than expected self-interests, which could be meaningfully different. Managers may have different expectations about the impact of forecast optimism on their self-interested behavior than they actually realize. I didn't find a meaningful relationship between realized payoffs and accessibility, but this could be attributed to differences between realized and expected payoffs, namely when managers are making accessibility decisions on their expected, not realized, payoffs.

7.4.2 Theoretical limitations and research opportunities. While I think this work is critical in starting to unpack the nature of the interaction at the manager-analyst interface, it opens the door for additional research to clarify and further bound this model. In this section, I highlight some

of the theoretical limitations of this study and future work that could extend from my dissertation.

Game choice. First, I deal directly with the limited support I found for an assurance game between managers and analysts. The payoffs indicated more support for a prisoner's dilemma game than an assurance game, which suggests that either managers can not achieve their highest payoffs when they coordinate with analysts or managers and analysts lack the mutual trust to fully coordinate and achieve their highest payoffs. One way to examine this issue would be to see if RegFD served as a true "game changer." Was an assurance game in effect prior to RegFD, but with the regulation shaking up the relationship between managers and analysts, did a prisoner's dilemma prevail? I did not check for this game changing behavior because I did not have a good measure of accessibility prior to RegFD. Recall, prior to RegFD managers and analysts did not have to disclose their meetings. However, other proxies, such as school ties (Cohen et al., 2010), could be used as a proxy for accessibility to test the hypothesis that RegFD was a "game-changer". In addition to RegFD working to deter manager and analyst collusion, it is also possible that increasing regulatory pressure placed on brokerages and investment banks (Demos, 2013; Russolillo, 2012) has also limited the ability for managers and analysts to coordinate, pushing them increasingly toward a prisoner's dilemma game and away from an assurance game.

Game players. In addition to studying game changes between managers and analysts, it is also important to more fully incorporate analyst outcomes into the model. Just as managers risk added scrutiny when they are accessible to analysts, analysts too take a risk when issuing lenient

optimistic forecasts because this behavior runs counter to their purpose as information intermediaries for owners and potential investors. This suggests that analysts, motivated by their self-interest, make a temporal trade-off in their forecasts to secure highly coveted information from managers that will fuel their future accuracy. It is possible that analysts put some of their current accuracy and good-will with investors at risk to insure the sustained accuracy that is most important to their professional recognition and wealth (CFA Institute, May 28, 2008; Hong & Kubik, 2003). While I do not fully incorporate this consideration of analyst motivations into this study, it implies several opportunities for future research.

First, while analyst and investors goals appear to be aligned around forecast accuracy, if analysts are willing to make a self-interested temporal trade-off in their accuracy this suggests that even goals that appear qualitatively aligned may be misaligned on other dimensions such as temporal horizon, generating agency-like costs where there appears there should be none. Future research should examine analyst self-interested behavior over time. Second, future research could incorporate joint consideration of manager and analyst self-interested outcomes to predict selection into the payoff matrix over time, more fully capturing the essence of an assurance game.

From the perspective of owners, analyst coverage may provide legitimacy and monitoring benefits, but my work demonstrates that this is not likely the equilibrium state. Managers are more likely to use analysts to maximize managerial self-interested payoffs by restricting internal access. Even when managers are accessible to analysts, they are likely looking for analysts to reciprocate with artificially optimistic forecasts. These outcomes have potentially value-destroying implications for managers. There is work in the accounting literature that indicates investors are aware of the coordinated behavior between managers and analysts and use their

awareness to place pressure on analyst's forecasts (Löffler, 1998). This suggests investors likely place pressure on managers as well, making them a relevant third party in this game-theoretic model. While I bound this model to the manager and analyst interaction I do recognize the important role of owners. Indirectly firm performance represents investors' interests, a condition when investors are more or less likely to scrutinize managerial behavior. The post-hoc findings of a significant three-way interaction between managers, analysts and firm performance suggest the presence of a 3-player game. Future work could more fully incorporate owners into the game to gain a better understanding of the evolving role analysts play in both owners' and managers' utility functions.

A three party game can highlight the limits of a coordinated relationship between managers and analysts. Put differently, it is likely that value-maximizing owners will only incur so many costs generated from the interaction between managers and analysts before they defect by changing the players in the game (e.g. replacing management and switching their investment strategy). Furthermore, despite the flurry of interest on analysts in the management literature no work links analysts with firm performance outcomes aside from stock performance. Again, game theoretic reasoning would force consideration of the costs and benefits of owner interactions with analysts and managers. Only when we can account for the real trade-offs that owners are making in their interactions with analysts, can we ultimately theorize on the performance implications of analyst coverage.

Level of analysis. Future research could also take a more micro view, examining the dyadic relationship between an individual manager and an individual analyst. This dissertation has examined aggregate level analyst behavior using consensus analyst forecasts. However, while

analysts are foundationally interested in achieving accuracy (Hong & Kubik, 2003), they also want to be different from their peers. Individual analysts anti-herd (Bernhardt et al., 2006) as they seek to differentiate from one another in order to attract customers. Research has used proxies like network ties (Burt, 2007; Cohen et al., 2010) to examine the likelihood of information exchange between managers and analysts at a dyadic level. Future research could look at this flow of information more directly using filings on management meetings. Professional and educational ties should predict patterns in meetings with management, providing validation for those proxy measures. Furthermore, this area is ripe for more exploratory research with analysts to identify any other systematic indicators of private information exchange in analyst reports or the MD&A sections of annual reports that content analysis could detect.

Simultaneous consideration of alternative bonding mechanisms. Another area for future research is identifying more bonding mechanisms that managers have at their disposal. For example, I identified accessibility as one way in which managers bond themselves to analysts. While accessibility benefits analysts, managers can engage in other activities that positively contribute to analyst accuracy. Since analysts have more expertise in their industries of specialization they are more comfortable and more accurate valuing firm activity adjacent to their industries (Boni & Womack, 2006; Groysberg & Lee, 2009; Zuckerman, 1999). Indeed, managers make investments and engage in strategic actions that analysts can positively value. For example, Zuckerman (2000) found that firms make de-diversification decisions through divestment to better align themselves to their covering analysts' industries. Similarly, Benner (2010) found analysts discourage adoption of technologies that are considered radically new to

the industry because analysts are unsure how to value adopters. Ultimately, managers that do undertake unique strategies are penalized by analysts who have to incur additional information costs to learn about the unique strategy (Litov et al., 2012), while managers that focus on the core business are rewarded with higher valuations (Nicolai et al., 2010). Thus, managers could bond with analysts through industry-aligned strategic actions, which future research could explore.

Similarly, shorter horizon investments are easier for analysts to value. Managers looking to bond with analysts may emphasize short-term profits over long-term profits, even though short term investments are not necessarily risk averse (Souder & Shaver, 2010) and firm value decreases with short-term investment (Souder, 2007). Nevertheless, analysts struggle to value future earnings streams (Boni & Womack, 2006; Conroy & Harris, 1987) that would come from longer horizon investments. There is evidence that managers try to appease analysts with short-term behaviors (Zhang & Gimeno, 2010) and reductions in longer-term investments (Benner & Ranganathan, 2012; Gentry & Shen, 2013). Thus, managers could maintain a short-term horizon investment portfolio to contribute to analyst accuracy and bond themselves to analysts.

Therefore, both industry-aligned and short-horizon strategic actions are potentially alternative types of bonding mechanisms undertaken by managers. Future research could not only examine these strategic actions using similar game-theoretic reasoning, but also examine the trade-off between bonding activities. Since strategic actions are far more difficult to reverse than accessibility, managers would likely have to be very assured of analyst reciprocation to use these bonding mechanisms.

Simultaneous consideration of alternative monitoring mechanisms. In addition to the consideration of multiple, simultaneous bonding mechanisms, future research could consider simultaneous monitoring mechanisms. I argue analysts are an external form of monitoring over managerial behavior because owners do not specifically direct analyst behavior. Owners control a wide range of internal monitoring activities (e.g. boards, information systems, self-monitoring through incentives). The interplay between different monitoring mechanisms, including external mechanisms like analysts, their relative costs and monitoring benefits could further inform agency models. For example, managers are more likely to direct attention toward institutional owners as institutional ownership increases (Westphal & Bednar, 2008), and possibly away from analysts. Furthermore, ownership concentration is a substitute for internal mechanisms to monitor managers (Desender, Aguilera, Crespi, & Garcia□Cestona, 2013; Wiseman, Cuevas□Rodríguez, & Gomez□Mejia, 2012), and may also be a substitute for external monitoring mechanisms, like security analysts. Future research should consider the impact of substitution for analyst monitoring.

Another area for future research in the domain of monitoring mechanisms is the relationship between managerial self-monitoring, through ownership and stock options, and analyst monitoring. When managers hold ownership they have a personal stake in growing the value of the stock, which would suggest added engagement with analysts who have significant influence over stock price. However, owner-managers no longer look to analysts to access information and expertise and don't have the incentive to add analyst-related costs that would only serve to reduce their residuals. Indeed, the agency problem ceases to exist for owner-managers because there is no separation of ownership and control (Fama & Jensen, 1983b), preempting the role of analysts as monitors. Thus, in firms with significant managerial

ownership is this game theoretic model less applicable because there is less incentive for managers to coordinate with analysts according to agency arguments, or is the game-theoretic model even more applicable because owner-managers are trying to optimally balance across their self-interests – risk aversion and stability with residual maximization? The manager-analyst interface could be an area to examine these competing self-interests.

7.5 Practical Implications

This dissertation highlights the costs involved when principals draw on managers and analysts to achieve their goals. In theory, owners benefit when analysts dominant monitors. In this scenario managers are accessible to analysts, but analysts continue to strictly monitor managerial behavior, incorporating any information into their forecasts. As a result, managers' self-interested behavior is suppressed to it lowest levels. The aggregate management literature would seem to suggest that this is the most common state, holding analysts as powerful institutional monitors directing managerial behavior (e.g. Benner & Ranganathan, 2012; Gentry & Shen, 2013; Zhang & Gimeno, 2010; Zuckerman, 2000). However, these results suggest managers largely ignore analysts when firms are performing well. Furthermore, assurance game theoretic reasoning holds that analyst dominance is not a sustainable equilibrium and unlikely to drive consistent value for owners. More likely analysts and managers will mutually coordinate or not, both leading to suboptimal outcomes for owners. While this would seem to argue against the utility of analysts for investors, I think it more likely acknowledges analysts as a double-edged sword for firms. Analysts are important to attracting capital and maintaining market value (e.g. Brown et al., 1985; Jegadeesh et al., 2004; Zuckerman, 1999), but, somewhat paradoxically, they engage with managers in such a way that encourages non-optimal uses of firm capital.

The evidence from this study suggests that manager's self-interested behavior is actually minimized when analysts are pessimistic and managers are inaccessible (both defect). Given this is the state that holds the largest portion of the sample, this would seem to suggest that owner's are benefiting from the tension between managers and analysts. However, owner's want to hold stocks with future promise and these results indicate that as soon as analysts are even modestly optimistic on firms with inaccessible managers, managerial self-interested behavior takes off. These results seem to provide support for owner efforts to increase managerial accessibility in the wake of RegFD where managers benefit from inaccessibility. However, more broadly this research demonstrates that managers and analysts have adapted their behavior after RegFD. Further regulation may just continue to propel managers and analysts toward a game that may never be possible to regulate, as they adapt with increasingly private and subtle information exchange (Solomon, 2014).

7.6 Conclusion

Current research has managers playing a relatively deferential role in their relationship to analysts with analysts exerting dominant influence over managers as monitors and powerful institutions. I argue both managers and analysts have interdependent self-interested outcomes that allows for more collaborative, but also more contentious, models of manager and analyst interaction commonly observed in practice, but not fully accounted for in current theory. Managerial self-interested behavior is sensitive to the degree of optimism in analysts' forecasts as analysts direct the tide of investor attention. In particular, managers are able to maximize their self-interested behavior when they restrict their accessibility to analysts at a time when analysts are optimistic and firm performance is strong.

TABLES & FIGURES

TABLE 1: Descriptive Statistics and Correlations

	Variable	Description	Mean	Std Dev	Min	Max	1	2	3	4	5	6	7
1	Managerial Self-Interested Behavior	Log of Reserves per dollar of premium	0.94	1.46	-2.56	5.78							
2	Accessibility	Count of RegFD filings per covering analyst at *t+1*	0.54	0.94	0.00	10.50	0.04						
3	Analyst Forecast Optimism	Difference between first reported median EPS and prior year end actual EPS per dollar of share price	0.01	0.11	-0.30	1.80	0.09	0.07					
4	Access Dummy	"1" when the number of firm RegFD fillings are at or above the fiscal year mean	0.29	0.46	0.00	1.00	0.04	0.54	0.02				
5	ROE	Return on Equity	0.09	0.24	-2.69	4.62	-0.16	-0.05	-0.05	0.02			
6	Forecast Standard Deviation	Standard deviation of the first reported forecasts in the fiscal year	0.15	0.39	0.00	4.25	0.13	0.10	0.37	0.02	-0.15		
7	CEO Age	Age of the CEO in years	56.27	7.14	36.00	85.00	0.07	-0.03	0.03	-0.07	-0.02	0.06	
8	Cash	Cash per dollar of assets at end of *t-1*	0.05	0.09	0.00	0.76	-0.57	0.00	-0.02	0.06	0.07	-0.07	-0.24
Year Dummy Variables:													
	2002	Dummy for 2002	0.06	0.24	0.00	1.00							
	2003	Dummy for 2003	0.07	0.25	0.00	1.00							
	2004	Dummy for 2004	0.07	0.26	0.00	1.00							
	2005	Dummy for 2005	0.08	0.27	0.00	1.00							
	2006	Dummy for 2006	0.09	0.28	0.00	1.00							
	2007	Dummy for 2007	0.09	0.29	0.00	1.00							
	2008	Dummy for 2008	0.09	0.29	0.00	1.00							
	2009	Dummy for 2009	0.10	0.30	0.00	1.00							
	2010	Dummy for 2010	0.10	0.30	0.00	1.00							
	2011	Dummy for 2011	0.10	0.30	0.00	1.00							
	2012	Dummy for 2012	0.10	0.30	0.00	1.00							

TABLE 2a: Fixed Effects Regression on Managerial Self-interested Behavior

	Model 1			Model 2			Model 3			Model 4			Model 5		
	Coef.	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*
Optimism				0.26	0.17	1.54	0.25	0.16	1.58	0.62	0.39	1.59	1.91	0.81	2.36 *
Optimism squared													-1.06	0.46	-2.34 *
ROE							0.09	0.19	0.48	-0.15	0.15	-0.99	-0.31	0.17	-1.84 †
Forecast Std Dev	0.16	0.05	3.28 **	0.13	0.05	2.59 *	0.14	0.05	2.80 **	0.11	0.04	2.69 **	0.07	0.06	1.14
CEO Age	0.00	0.00	0.29	0.00	0.00	0.29	0.00	0.00	0.33	0.00	0.00	0.12	0.00	0.00	0.07
Cash	0.82	0.87	0.95	0.78	0.84	0.94	0.74	0.83	0.89	0.66	0.78	0.84	0.42	0.67	0.63
Access							-0.03	0.04	-0.80	-0.02	0.04	-0.64	-0.02	0.04	-0.66
Optimism X Access										-0.65	0.44	-1.48	-1.68	0.75	-2.23 *
Optimism squared X Access													1.02	0.44	2.31 *
Optimism X ROE										1.03	0.48	2.14 *	2.50	0.73	3.45 **
Optimism squared X ROE													-1.76	0.82	-2.15 *
Year Dummies:															
2002	0.01	0.05	0.26	0.01	0.05	0.26	0.01	0.05	0.26	0.02	0.05	0.36	0.01	0.05	0.26
2003	0.03	0.05	0.54	0.03	0.05	0.51	0.03	0.05	0.48	0.04	0.05	0.69	0.03	0.05	0.64
2004	0.05	0.06	0.86	0.05	0.06	0.85	0.04	0.06	0.71	0.06	0.06	1.03	0.07	0.06	1.14
2005	0.06	0.06	0.95	0.06	0.06	0.95	0.05	0.06	0.81	0.07	0.06	1.10	0.08	0.06	1.22
2006	0.02	0.06	0.39	0.02	0.06	0.41	0.01	0.06	0.24	0.04	0.06	0.63	0.04	0.06	0.76
2007	0.07	0.07	1.10	0.07	0.07	1.10	0.07	0.07	1.02	0.08	0.06	1.23	0.08	0.06	1.33
2008	0.12	0.08	1.58	0.11	0.07	1.54	0.12	0.07	1.59	0.10	0.07	1.58	0.06	0.06	1.02
2009	0.10	0.07	1.60	0.10	0.06	1.49	0.09	0.07	1.40	0.10	0.06	1.57	0.09	0.06	1.49 †
2010	0.11	0.07	1.71 †	0.11	0.07	1.63	0.10	0.07	1.57	0.10	0.06	1.64	0.11	0.06	1.85 *
2011	0.14	0.07	2.04 *	0.14	0.07	2.06 *	0.14	0.07	2.03 *	0.14	0.07	2.04 *	0.12	0.06	1.93 *
2012	0.09	0.07	1.36	0.09	0.07	1.31	0.09	0.07	1.26	0.09	0.07	1.31	0.08	0.06	1.19
Constant	0.76	0.18	4.32 **	0.77	0.17	4.45 **	0.77	0.17	4.44 **	0.82	0.16	5.03 **	0.86	0.15	5.67 **
F			2.18 *			1.85 *			2.09 *			2.08 *			11.83 **
R-squared within			0.0812			0.0915			0.1000			0.1532			0.2219
R-squared between			0.2088			0.1976			0.2193			0.1620			0.0688
R-squared overall			0.0947			0.0751			0.0796			0.0297			0.0012

N=828

[1] Robust Standard Errors

** *Statistically significant at the 99% confidence level*

* *Statistically significant at the 95% confidence level*

† *Statistically significant at the 90% confidence level*

TABLE 2b: Censored Random Effect Regression (Tobit) on Next Year Accessibility

	Model 6			Model 7			Model 8			Model 9			Model 10		
	Coef.	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*
Optimism				-0.29	0.33	-0.89	-0.32	0.80	-0.41				-0.41	0.81	-0.51
Optimism squared							0.02	0.59	0.04				0.07	0.59	0.12
Mgr Self-interested Behavior										0.03	0.06	0.55	0.04	0.06	0.70
ROE	-0.03	0.17	-0.17	-0.02	0.17	-0.10	-0.02	0.17	-0.10	-0.02	0.17	-0.11	0.00	0.17	-0.02
Forecast Std Dev	0.10	0.09	1.02	0.12	0.10	1.26	0.12	0.10	1.26	0.09	0.09	0.98	0.12	0.10	1.25
CEO Age	0.00	0.01	0.41	0.00	0.01	0.40	0.00	0.01	0.40	0.00	0.01	0.40	0.00	0.01	0.39
Access - Current Year	0.58	0.04	15.39 **	0.59	0.04	15.27 **	0.59	0.04	15.25 **	0.58	0.04	15.36 **	0.59	0.04	15.24 **
Industry segment (SIC) Dummies:															
6321	0.01	0.26	0.03	0.01	0.26	0.03	0.01	0.26	0.03	0.06	0.28	0.21	0.08	0.28	0.27
6324	0.12	0.18	0.67	0.13	0.18	0.71	0.13	0.18	0.71 †	0.25	0.30	0.85	0.30	0.30	0.99
6331	0.01	0.14	0.07	0.01	0.14	0.10	0.01	0.14	0.11	0.07	0.18	0.40	0.09	0.18	0.53
6351	0.02	0.19	0.13	0.03	0.19	0.17	0.03	0.19	0.18	0.08	0.22	0.39	0.11	0.22	0.51
6361	-0.86	0.54	-1.60	-0.85	0.53	-1.59	-0.85	0.53	-1.59	-0.75	0.56	-1.33	-0.71	0.56	-1.28 †
6411	-3.41	87.26	-0.04	-3.39	87.03	-0.04	-3.39	86.75	-0.04	-3.37	87.17	-0.04	-3.34	86.60	-0.04
Year Dummies:															
2002	0.25	0.13	1.85 †	0.25	0.13	1.85 †	0.25	0.13	1.85 †	0.25	0.13	1.84 †	0.25	0.13	1.85 †
2003	-0.18	0.14	-1.33	-0.19	0.14	-1.33	-0.19	0.14	-1.33	-0.19	0.14	-1.34	-0.19	0.14	-1.34
2004	-0.19	0.14	-1.40	-0.20	0.14	-1.41	-0.20	0.14	-1.41	-0.20	0.14	-1.42	-0.20	0.14	-1.44
2005	-0.15	0.14	-1.13	-0.16	0.14	-1.15	-0.16	0.14	-1.15	-0.16	0.14	-1.14	-0.16	0.14	-1.17
2006	0.00	0.13	-0.01	-0.01	0.13	-0.04	0.00	0.13	-0.04	0.00	0.13	-0.02	-0.01	0.13	-0.05
2007	0.10	0.13	0.75	0.10	0.13	0.73	0.10	0.13	0.73	0.10	0.13	0.73	0.09	0.13	0.70
2008	-0.05	0.14	-0.38	-0.05	0.14	-0.38	-0.05	0.14	-0.38	-0.05	0.14	-0.39	-0.05	0.14	-0.39
2009	-0.07	0.14	-0.49	-0.06	0.14	-0.45	-0.06	0.14	-0.44	-0.07	0.14	-0.50	-0.06	0.14	-0.45
2010	-0.25	0.14	-1.85 †	-0.25	0.14	-1.82 †	-0.25	0.14	-1.82 †	-0.26	0.14	-1.87 †	-0.26	0.14	-1.85 †
2011	0.05	0.13	0.38	0.05	0.13	0.36	0.05	0.13	0.36	0.05	0.13	0.35	0.04	0.13	0.31
Constant	-0.05	0.33	-0.15	-0.06	0.33	-0.17	-0.06	0.33	-0.17	-0.14	0.37	-0.37	-0.17	0.37	-0.46
χ^2			281.18 **			283.51 **			283.50 **			280.68 **			283.49 **

N=705 (222 are left-censored observations)

** *Statistically significant at the 99% confidence level*

* *Statistically significant at the 95% confidence level*

† *Statistically significant at the 90% confidence level*

TABLE 3a: Descriptive Statistics and Correlations (1991-2012 Sample)

Variable	Mean	Std Dev	Min	Max	1	2	3	4	5	6
1 Managerial Self-interested Behavior	1.04	1.37	-2.56	5.78						
2 Forecast Optimism	0.01	0.10	-0.30	1.80	0.10					
3 Post RegFD Dummy	0.77	0.42	0.00	1.00	-0.13	0.05				
4 ROE	0.09	0.22	-2.69	4.62	-0.09	-0.06	-0.04			
5 Forecast Std Dev	0.13	0.35	0.00	4.25	0.11	0.37	0.10	-0.17		
6 CEO Age	56.75	7.42	36.00	85.00	0.09	0.02	-0.11	-0.02	0.04	
7 Cash	0.04	0.08	0.00	0.76	-0.54	-0.02	0.21	0.04	-0.04	-0.21

TABLE 3b: Fixed Effects Regression on Managerial Self-interested Behavior (1991-2012 Sample)

	Model 1			Model 2			Model 3			Model 4		
	Coef.	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*	*Coef.*	*SE*[1]	*t*
Optimism				0.32	0.18	1.81 †	0.46	0.22	2.07 *	1.42	0.55	2.56 *
Optimism squared										-0.86	0.37	-2.34 *
Post RegFD Dummy	0.07	0.12	0.57	0.06	0.12	0.53	0.06	0.12	0.51	0.05	0.12	0.45
ROE	-0.03	0.22	-0.12	-0.03	0.22	-0.13	-0.24	0.16	-1.51	-0.37	0.16	-2.33 *
Forecast Std Dev	0.22	0.06	3.46 **	0.18	0.06	2.97 **	0.16	0.05	3.29 **	0.11	0.05	2.15 *
CEO Age	0.00	0.00	-0.06	0.00	0.00	-0.08	0.00	0.00	-0.29	0.00	0.00	-0.25
Cash	0.51	0.89	0.57	0.45	0.85	0.53	0.38	0.81	0.47	0.27	0.73	0.37
Optimism X ROE							1.05	0.56	1.88 †	2.92	0.77	3.77 **
Optimism squared X ROE										-2.46	0.75	-3.28 **
Constant	0.95	0.18	5.41 **	0.96	0.17	5.57 **	1.02	0.16	6.26 **	1.04	0.16	6.62 **
F			3.77 **			2.32 *			2.37 *			137.91 **
R-squared within			0.0401			0.0469			0.0772			0.1171
R-squared between			0.1257			0.1086			0.0679			0.0344
R-squared overall			0.0326			0.0186			0.0031			0.0002

N=1081

[1] Robust Standard Errors

** *Statistically significant at the 99% confidence level*

* *Statistically significant at the 95% confidence level*

† *Statistically significant at the 90% confidence level*

TABLE 4: Fixed Effect Negative Binomial Regression on Next Year Accessibility

	Model 1			Model 2			Model 3			Model 4		
	Coef.	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*
Optimism	-0.52	0.60	-0.86	-0.35	1.30	-0.27				-0.18	1.32	-0.13
Optimism squared				-0.12	0.78	-0.15				-0.19	0.79	-0.24
Mgr Self-interested Behavior							-0.11	0.09	-1.24	-0.10	0.09	-1.17
ROE	-0.26	0.19	-1.39	-0.26	0.19	-1.40	-0.31	0.19	-1.67 †	-0.30	0.19	-1.59
Forecast Std Dev	0.11	0.14	0.78	0.10	0.15	0.70	0.05	0.13	0.41	0.10	0.15	0.68
CEO Age	0.01	0.01	1.35	0.01	0.01	1.35	0.01	0.01	1.37	0.01	0.01	1.36
Year Dummies:												
2002	0.60	0.16	3.83 **	0.60	0.16	3.83 **	0.60	0.16	3.80 **	0.59	0.16	3.79 **
2003	0.26	0.17	1.50	0.25	0.17	1.50	0.25	0.17	1.48	0.25	0.17	1.48
2004	0.20	0.17	1.14	0.20	0.17	1.15	0.21	0.17	1.26	0.21	0.17	1.25
2005	0.16	0.17	0.92	0.16	0.17	0.92	0.19	0.17	1.11	0.19	0.17	1.07
2006	0.31	0.17	1.85 †	0.31	0.17	1.85 †	0.32	0.16	1.94 †	0.32	0.16	1.91 †
2007	0.61	0.16	3.87 **	0.62	0.16	3.88 **	0.62	0.16	3.92 **	0.62	0.16	3.90 **
2008	0.58	0.16	3.54 **	0.58	0.16	3.54 **	0.58	0.16	3.56 **	0.58	0.16	3.55 **
2009	0.49	0.17	2.90 **	0.48	0.17	2.88 **	0.49	0.17	2.91 **	0.48	0.17	2.90 **
2010	0.28	0.17	1.65 †	0.28	0.17	1.66 †	0.28	0.17	1.64	0.28	0.17	1.67 †
2011	0.46	0.16	2.82 **	0.46	0.16	2.82 **	0.47	0.16	2.88 **	0.46	0.16	2.85 **
Constant	-1.77	0.46	-3.81 **	-1.77	0.46	-3.81 **	-1.66	0.47	-3.50 **	-1.67	0.47	-3.53 **
Wald χ^2			46.95 **			46.93 **			48.35 **			48.92 **

N=681

Exposure is the log of Number of first reported forecasts

** *Statistically significant at the 99% confidence level*

* *Statistically significant at the 95% confidence level*

† *Statistically significant at the 90% confidence level*

TABLE 5: Post-hoc Censored Random Effect Regression (Tobit) on Year End Accessibility

	Model 1			Model 2			Model 3		
	Coef.	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*
Optimism				-0.42	0.31	-1.34	-2.39	0.75	-3.18 **
Optimism squared							2.16	0.75	2.89 **
ROE	-0.32	0.15	-2.18 *	-0.34	0.15	-2.22 *	-0.32	0.15	-2.09 *
Forecast Std Dev	0.19	0.08	2.31 *	0.22	0.09	2.57 **	0.18	0.09	2.06 *
CEO Age	0.00	0.01	-0.09	0.00	0.01	-0.08	0.00	0.01	-0.07
Access - Prior Year	0.60	0.04	16.44 **	0.61	0.04	16.53 **	0.61	0.04	16.68 **
Industry segment (SIC) Dummies:									
6321	0.04	0.26	0.16	0.03	0.26	0.13	0.03	0.25	0.10
6324	0.19	0.18	1.05 †	0.18	0.18	1.02 †	0.18	0.17	1.03 †
6331	0.03	0.14	0.21	0.02	0.14	0.14	0.03	0.14	0.18
6351	-0.02	0.19	-0.11	-0.02	0.19	-0.10	0.02	0.18	0.10
6361	-0.81	0.53	-1.53	-0.81	0.53	-1.55	-0.79	0.52	-1.53
6411									
Year Dummies:									
2003	0.26	0.13	1.94 †	0.26	0.13	1.96 *	0.27	0.13	2.03 *
2004	-0.17	0.14	-1.24	-0.17	0.14	-1.25	-0.18	0.14	-1.31
2005	-0.20	0.14	-1.43	-0.20	0.14	-1.45	-0.21	0.14	-1.54
2006	-0.16	0.14	-1.21	-0.17	0.14	-1.22	-0.16	0.13	-1.19
2007	-0.01	0.13	-0.04	-0.01	0.13	-0.05	-0.02	0.13	-0.12
2008	0.03	0.13	0.20	0.03	0.13	0.26	0.05	0.13	0.35
2009	-0.07	0.13	-0.53	-0.06	0.13	-0.44	-0.06	0.13	-0.43
2010	-0.11	0.13	-0.79	-0.11	0.13	-0.82	-0.12	0.13	-0.89
2011	-0.30	0.14	-2.17 *	-0.30	0.14	-2.19 *	-0.30	0.14	-2.18 *
2012	0.03	0.13	0.21	0.03	0.13	0.24	0.01	0.13	0.04
Constant	0.10	0.34	0.30	0.10	0.34	0.30	0.10	0.33	0.30
χ^2			308.25 **			311.58 **			320.87 **

N=705 (222 are left-censored observations)

** *Statistically significant at the 99% confidence level*

* *Statistically significant at the 95% confidence level*

† *Statistically significant at the 90% confidence level*

TABLE 6: Post-hoc Fixed Effect Regression on Managerial Self-interested Behavior (with Optimism-ROE-Accessibility interaction)

	Model 1			Model 2			Model 3		
	Coef.	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*	*Coef.*	*Std. Err.*	*z*
Optimism	0.27	0.17	1.61	0.29	0.22	1.33	0.22	0.19	1.15
ROE Dummy	-0.08	0.03	-2.71 **	-0.07	0.04	-2.00 *	-0.08	0.04	-2.11 *
Forecast Std Dev	0.12	0.05	2.43 *	0.11	0.05	2.13 *	0.12	0.05	2.57 *
CEO Age	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.00	0.23
Cash	0.86	0.83	1.04	0.70	0.78	0.89	0.71	0.77	0.92
Access Dummy	-0.03	0.04	-0.68	0.00	0.04	-0.04	-0.01	0.04	-0.18
Optimism X Access				-2.00	1.37	-1.45	0.04	0.51	0.09
Optimism X ROE				2.06	1.47	1.40	4.07	1.84	2.21 *
Access X ROE				-0.03	0.05	-0.67	-0.02	0.05	-0.34
Optimism X Access X ROE							-4.15	1.85	-2.24 *
Year Dummies:									
2002	0.01	0.05	0.16	0.01	0.05	0.31	0.00	0.05	0.06
2003	0.03	0.05	0.56	0.03	0.06	0.52	0.01	0.05	0.12
2004	0.04	0.06	0.61	0.04	0.06	0.69	0.03	0.06	0.59
2005	0.05	0.06	0.79	0.05	0.06	0.82	0.05	0.06	0.77
2006	0.01	0.05	0.14	0.01	0.06	0.23	0.01	0.05	0.11
2007	0.08	0.06	1.28	0.09	0.07	1.33	0.08	0.06	1.30
2008	0.12	0.07	1.62	0.11	0.07	1.69 †	0.10	0.06	1.61
2009	0.09	0.06	1.50	0.10	0.06	1.58	0.09	0.06	1.42
2010	0.12	0.06	1.82 †	0.12	0.07	1.85 †	0.13	0.06	1.95 †
2011	0.14	0.07	2.09 *	0.13	0.07	1.99 *	0.14	0.07	2.06 *
2012	0.09	0.07	1.28	0.08	0.07	1.23	0.08	0.07	1.24
Constant	0.80	0.16	4.93 **	0.83	0.16	5.09 **	0.83	0.16	5.12 **
F			1.63 †			1.66 †			2.64 **
R-squared within			0.1116			0.1417			0.1706
R-squared between			0.1433			0.1112			0.1202
R-squared overall			0.0478			0.0212			0.0179

N=828

** *Statistically significant at the 99% confidence level*

* *Statistically significant at the 95% confidence level*

† *Statistically significant at the 90% confidence level*

FIGURE 1: Model of the Manager-Analyst Interface

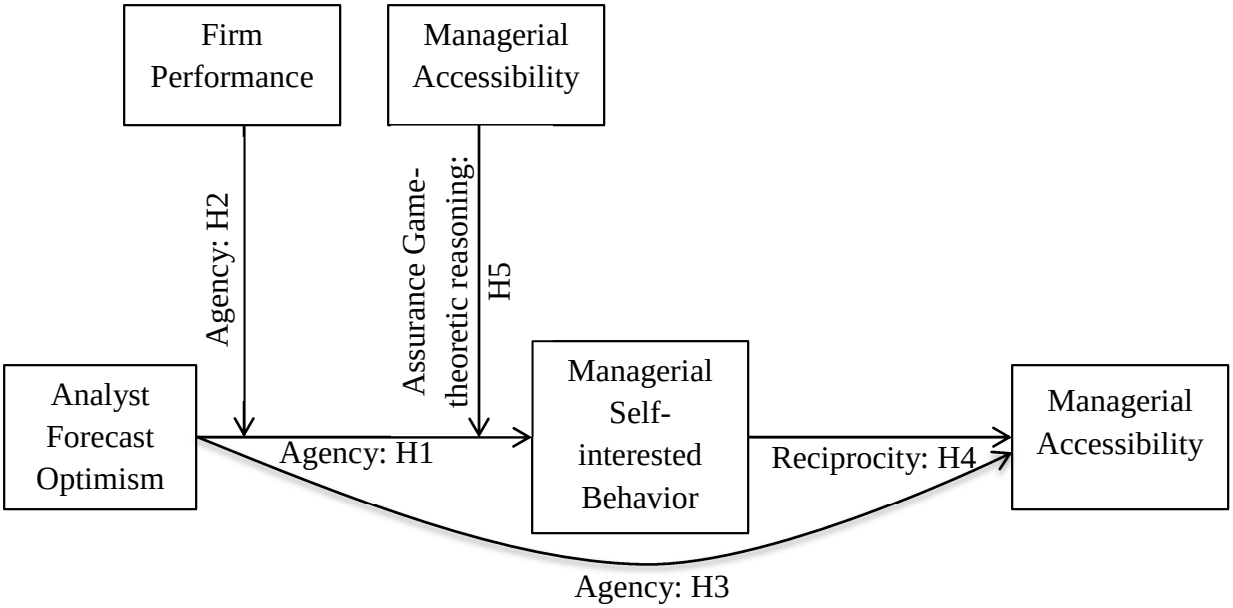


FIGURE 2: Manager Payoff Decision Tree

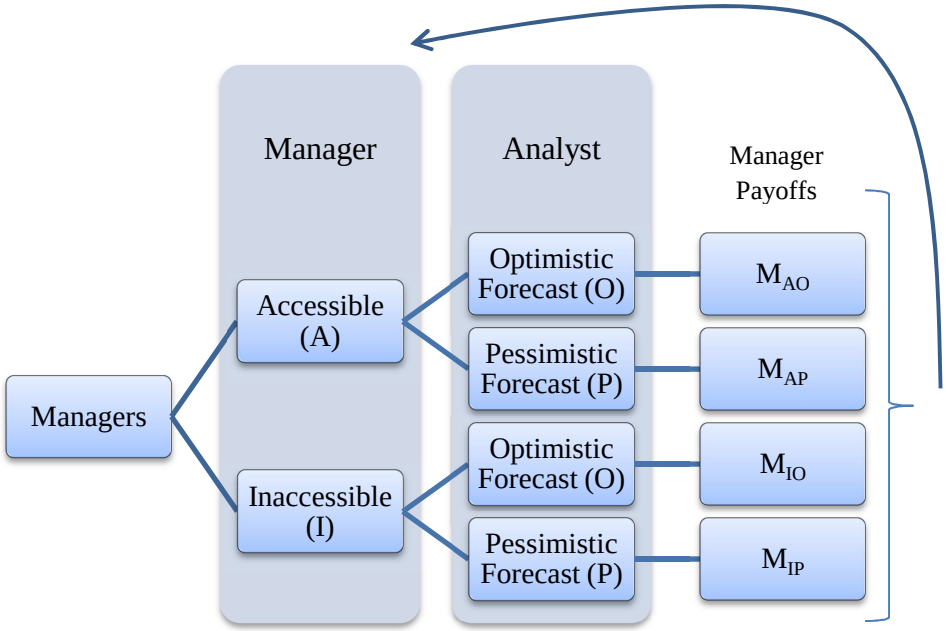


FIGURE 3: Payoff Matrix for Assurance Game Between Managers and Analysts

$M_{AO} > M_{IO} > M_{IP} > M_{AP}$

		Analyst	
		Optimistic Forecast (O)	Pessimistic Forecast (P)
Manager	Accessible (A)	**Q1: Mutual Coordination (M_{AO})** Analysts issue optimistic forecasts allowing managers to engage in self-interested behavior. Managers are accessible to gain assurances for analyst optimism further maximizing their ability to engage in self-interested behavior.	**Q2: Analyst Dominant (M_{AP})** Pessimistic forecasts attract investor scrutiny, constraining managerial self-interested behavior. Furthermore, by being accessible, managers are inviting added scrutiny over their behavior, minimizing their ability to act self-interestedly.
	In-accessible (I)	**Q3: Manager Dominant (M_{IO})** Analysts issue optimistic forecasts allowing managers engage in self-interested behavior. However, analyst optimism will be fleeting without reciprocation from managers.	**Q4: Mutual Defection (M_{IP})** Pessimistic forecasts attract investor scrutiny, constraining managerial self-interested behavior. Managers can engage in some self-interested behavior by being inaccessible to analysts, but absent analyst optimism, investors will still scrutinize managerial behavior.

FIGURE 4: Curvilinear Effect of Analyst Forecast Optimism on Managerial Self-interested Behavior

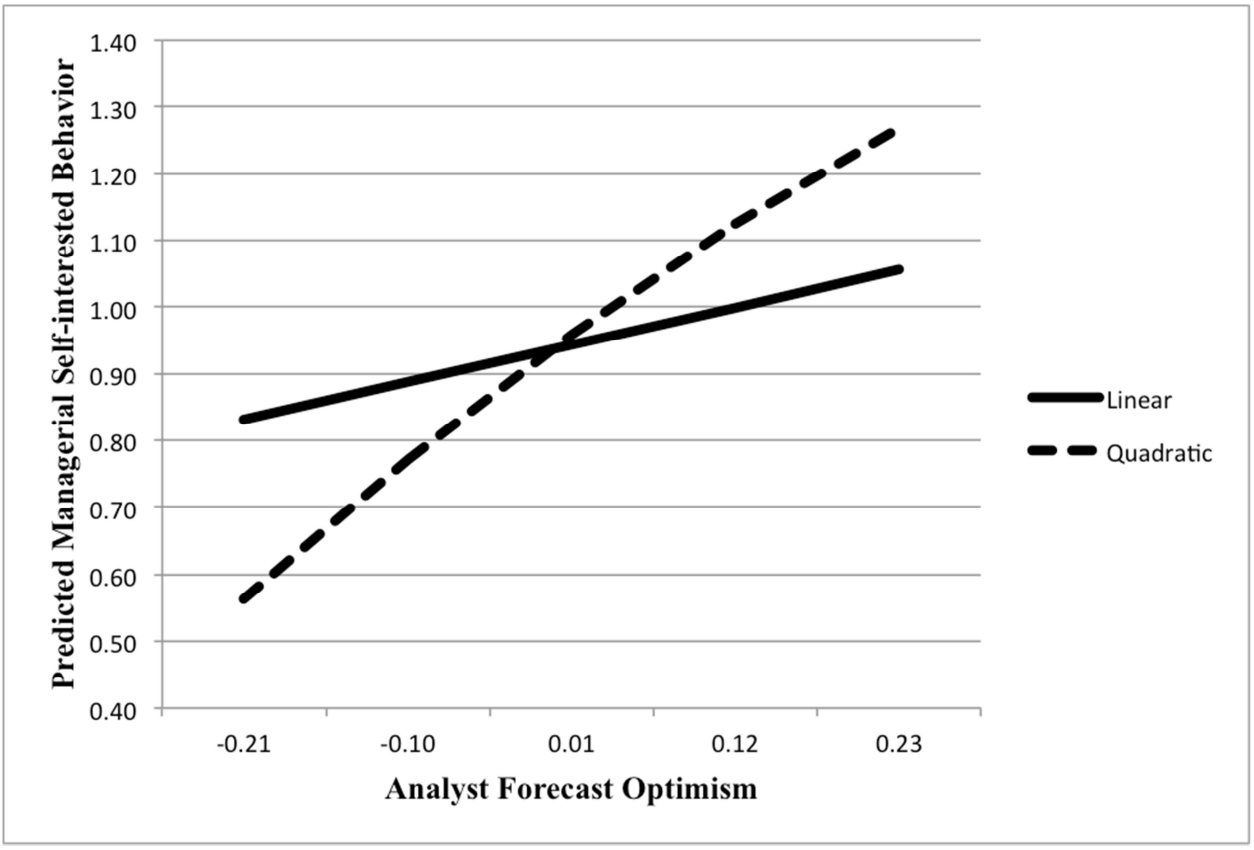


FIGURE 5: Predicted Managerial Self-interested Behavior at High and Low Levels of ROE across a range of Analyst Forecast Optimism

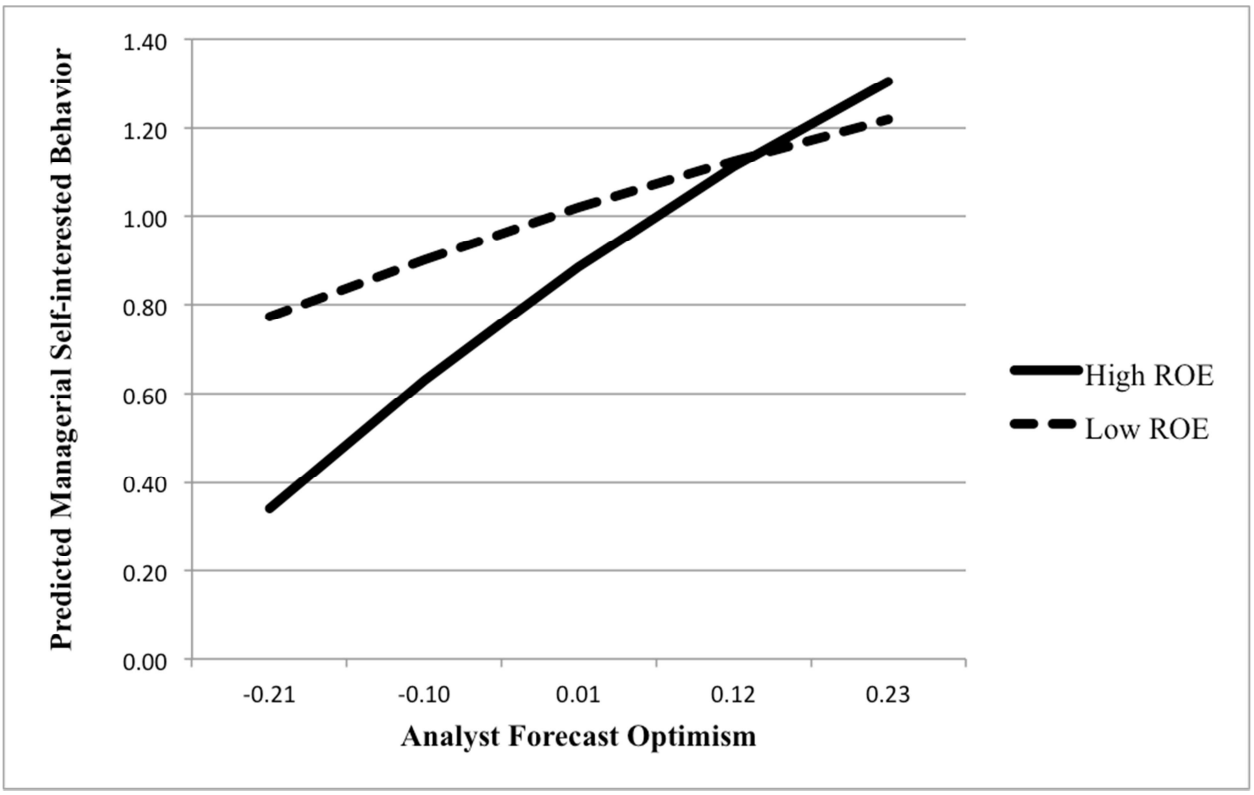


FIGURE 6: Observation Frequencies and Managerial Mean Payoffs Across the Payoff Matrix

		Analyst	
	N=828	Optimistic Forecast (O)	Pessimistic Forecast (P)
Manager	Accessible (A)	**Q1: Mutual Coordination (M_{AO})** Frequency: 90 Mean Managerial Self-interested Behavior: 1.22	**Q2: Analyst Dominant (M_{AP})** Frequency: 154 Mean Managerial Self-interested Behavior: 1.02
	Inaccessible (I)	**Q3: Manager Dominant (M_{IO})** Frequency: 250 Mean Managerial Self-interested Behavior: 0.95	**Q4: Mutual Defection (M_{IP})** Frequency: 334 Mean Managerial Self-interested Behavior: 0.82

FIGURE 7a: Predicted Managerial Self-interested Behavior at Above and Below Mean Accessibility across a range of Analyst Forecast Optimism

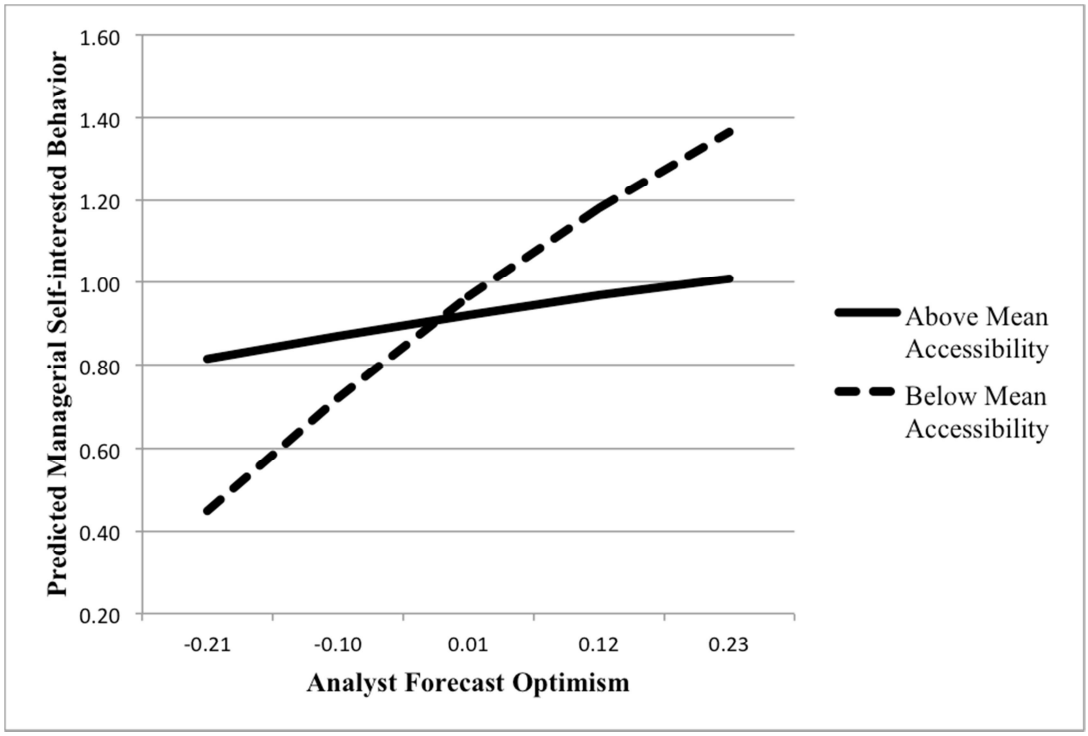


FIGURE 7b: Predicted Managerial Self-interested Behavior Above and Below Mean Accessibility across a range of Analyst Forecast Optimism with Associated Payoffs

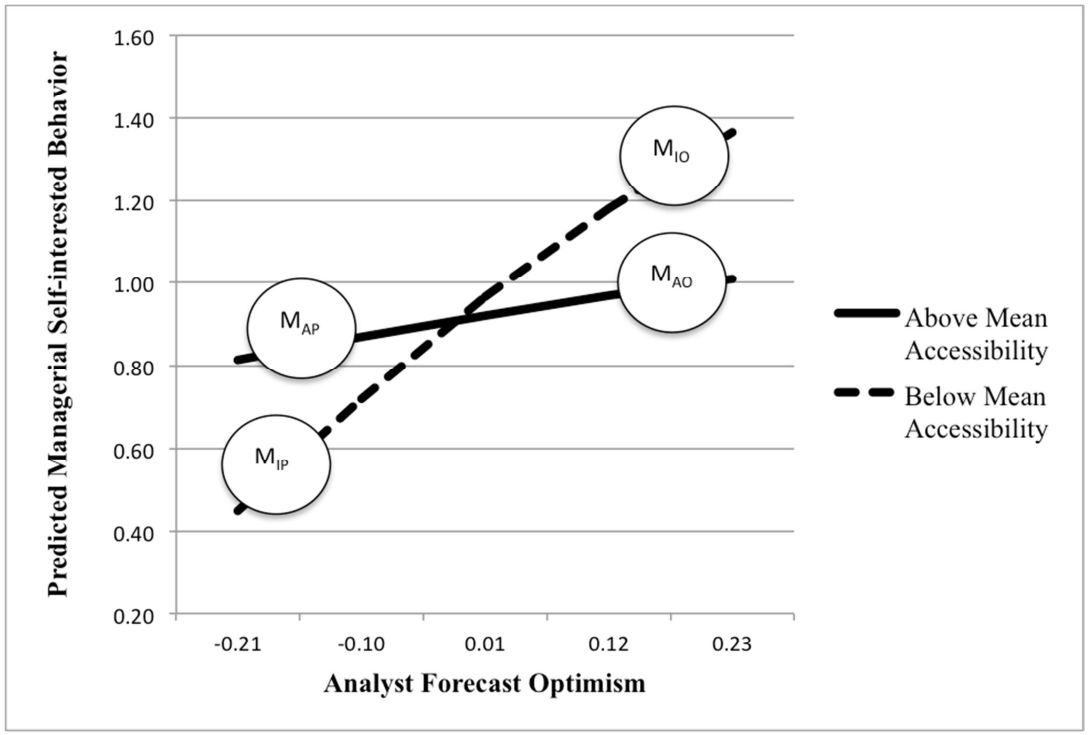


FIGURE 8a: Curvilinear Effect of Analyst Forecast Optimism on Predicted Managerial Self-interested Behavior (1991-2012 Sample)

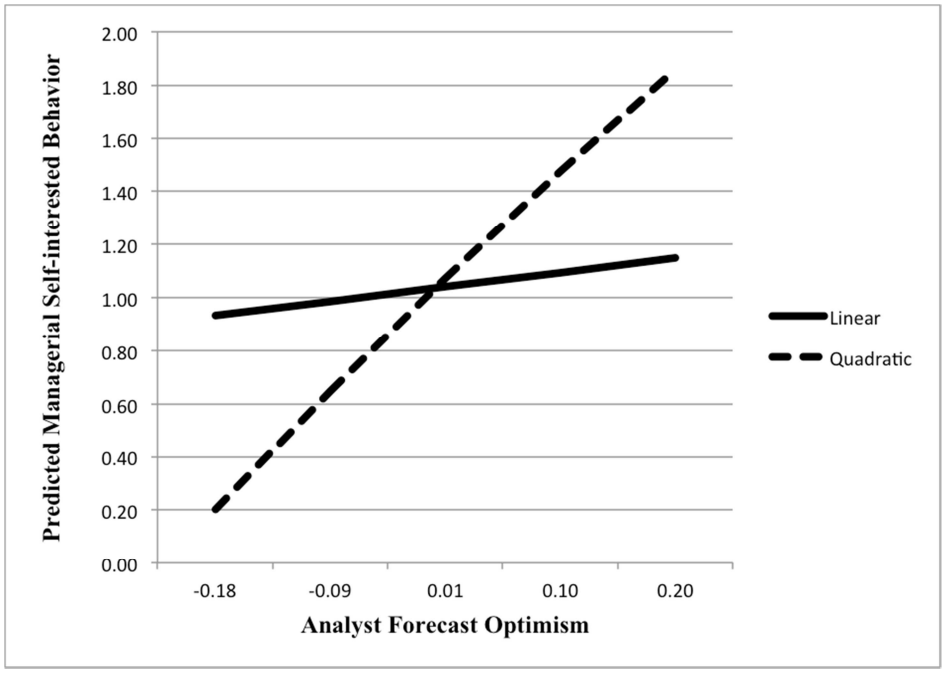


FIGURE 8b: Predicted Managerial Self-interested Behavior at High and Low Levels of ROE across a range of Analyst Forecast Optimism (1991-2012 Sample)

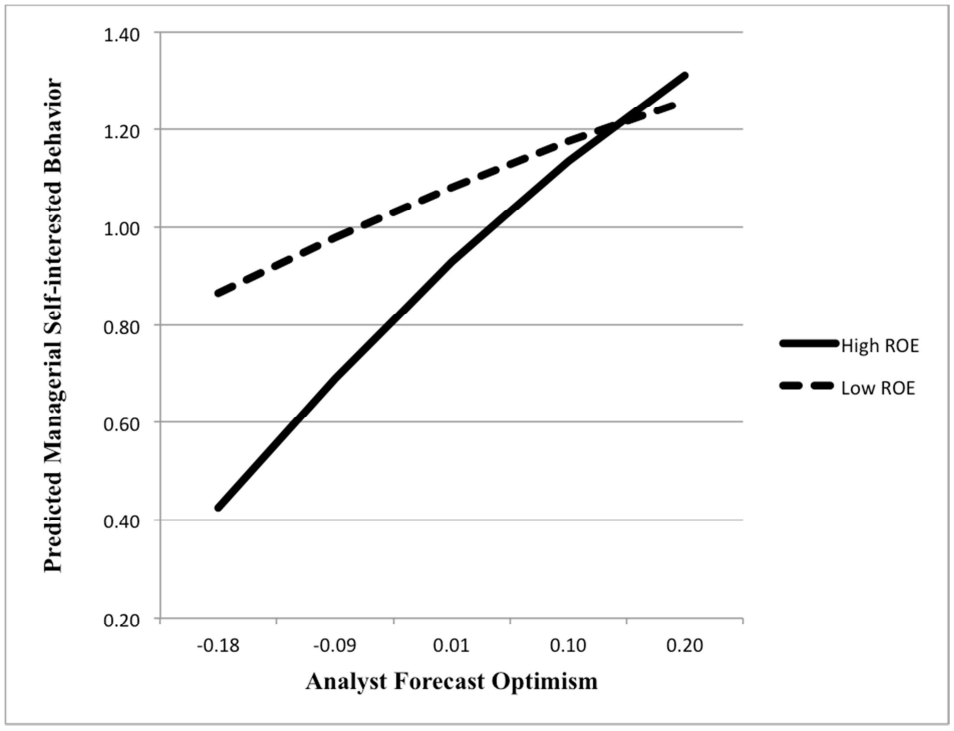


FIGURE 9: Post-hoc Curvilinear Effect of Analyst Forecast Optimism on Predicted Managerial Accessibility (using year end accessibility)

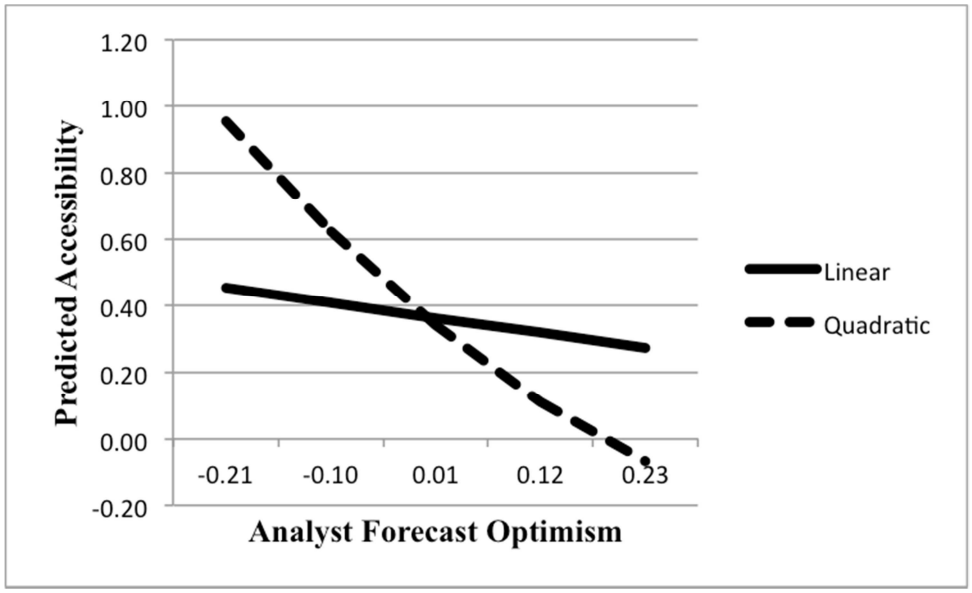


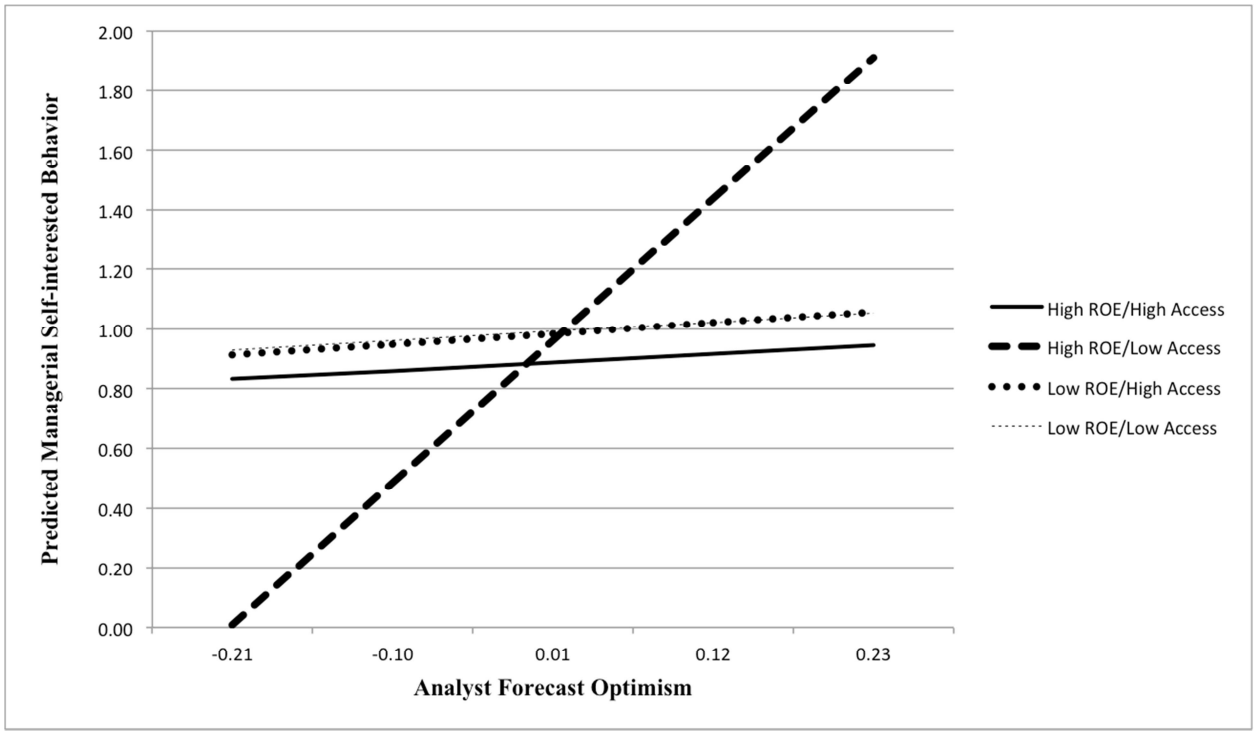
FIGURE 10a: Observation Frequencies and Managerial Mean Payoffs Across the Payoff Matrix At Above Mean Firm Performance

		Analyst	
	N=468	Optimistic Forecast (O)	Pessimistic Forecast (P)
Manager	Accessible (A)	**Q1: Mutual Coordination (M_{AO})** Frequency: 46 Mean Managerial Self-interested Behavior: 0.68	**Q2: Analyst Dominant (M_{AP})** Frequency: 86 Mean Managerial Self-interested Behavior: 0.62
	Inaccessible (I)	**Q3: Manager Dominant (M_{IO})** Frequency: 128 Mean Managerial Self-interested Behavior: 0.73	**Q4: Mutual Defection (M_{IP})** Frequency: 208 Mean Managerial Self-interested Behavior: 0.63

FIGURE 10b: Observation Frequencies and Managerial Mean Payoffs Across the Payoff Matrix At Below Mean Firm Performance

		Analyst	
	N=360	Optimistic Forecast (O)	Pessimistic Forecast (P)
Manager	Accessible (A)	**Q1: Mutual Coordination (M_{AO})** Frequency: 44 Mean Managerial Self-interested Behavior: 1.79	**Q2: Analyst Dominant (M_{AP})** Frequency: 68 Mean Managerial Self-interested Behavior: 1.51
	Inaccessible (I)	**Q3: Manager Dominant (M_{IO})** Frequency: 122 Mean Managerial Self-interested Behavior: 1.18	**Q4: Mutual Defection (M_{IP})** Frequency: 126 Mean Managerial Self-interested Behavior: 1.14

FIGURE 11: Post-hoc Predicted Managerial Self-interested Behavior across Three-way Interaction of Analyst Forecast Optimism, Managerial Accessibility and ROE



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